

To begin down the path to Zero Waste, the following changes are recommended for the collection system in Del Norte County:

- Work with Julindra Recycling (or other local processor) to develop the capacity to sort commingled recyclables, including all beverage containers, newspaper, cardboard, office paper and glass.
- Negotiate with Del Norte Disposal to expand their curbside recycling service and drop-off recycling centers to collect all commingled recyclables that Julindra can process.
- When disposal costs annually require "cost of living" adjustments in the garbage collection and disposal rates, decrease the rate for curbside recycling so that the cost of collecting one garbage can and curbside service is less than the cost for two garbage cans.

An assessment of the potential market demand for processed organics to a great extent determines the processing and collection system for organic materials. Organics recycling rates should be added to the choices offered to residents and businesses sometime after a pilot project. When the next garbage collection rates are adjusted after the pilot, the program will be most effective if the combined rate for curbside recycling, organics recycling and one can of garbage service is less than two cans of garbage service.

This three sort collection system (garbage, recyclables and organics) will provide residents, institutions and businesses alike with improved convenience for recycling, and will encourage them to choose to reuse and recycle through the structure of garbage rates and collection services.

B. Recovery from Self Haul Customers

Self hauled waste represents an unusually high 88% of the traffic at the County's only disposal facility, and disposes 60% of all tonnage disposed. With disposal costs rising, there will be less incentive for self-haulers to go all the way to the landfill, transfer station or container site. The presence of free drop-off recycling centers and buy-backs can reduce the overall cost of handling waste materials for residents. It can give them an opportunity to dispose of the majority of their recyclables and compostables at little to no costs, allowing them to afford the fee for dumping the materials they cannot recycle.

For self-haul, convenience and incentive is important. The site of recycling and garbage dumping is important. By educating the self haulers to keep recyclables and reusables separate, they could unload those materials first, before paying for unloading garbage.

This could also be done at the container sites in the smaller towns of Del Norte where garbage costs could be assessed after recyclables are removed. This is being

done to some extent now. Recycling would be free, but they would charge for garbage. (Examples can be found in Lane County, OR and desert areas of San Diego). Staff could assist in recycling and pull off reusables, or set up a covered section where these materials could be displayed for free. If sold, the value of the materials could offset the cost of the staff person.

Urban Ore designed a site for Humboldt County where recyclables, reusables and the sale of reusables come together on the site of the transfer station for garbage. Last Chance Mercantile in Monterey County and Recycletown in Sonoma County are other models. Urban Ore has found the most effective way to educate people on what is recyclable or reusable is to verbally explain and show the self-hauler when they come on the site.

At San Francisco's transfer station, self-haul vehicles go to a z-wall platform. Along the wall, there are 20-40 yard containers where materials are separated into cardboard, wood, paper, plastics, foam rubber, glass, metals, and other recyclables. Reusables are pulled out at that time including products (paint, cleaning fluids) that can be reused. Staff assist the unloading of vehicles and sorting into the containers.

Recommendations

- At the landfill or Resource Recovery Park, develop an area where additional materials can be separated and recycled. Create a covered area so self-haulers can sort their materials and lower their garbage costs. Having a sorting system in place for self-haulers to reduce their costs would be important.
- Container sites have z-walls. Recyclable drop offs are also available. Assess what additional materials could be sorted into boxes for recycling.

● Overall Issues for Collection

- Consider whether mandatory garbage collection service is needed in the areas provided with such service to decrease illegal dumping.
- Incentives should be established for ratepayers, waste hauler and recyclers so they will benefit economically from greater amounts of diversion.
- The current garbage rate structure does not encourage recycling and should be changed so that there is a linear increase in the cost of additional garbage cans (i.e., one can = \$x; two cans = \$2x).
- Mandatory source separation may be required if a recycling/reduction goal is not reached voluntarily.

● Drop-Offs

- Implement an "adopt a drop-off" program with local businesses and/or community organizations.
- Add a highgrade office paper option (start at one location to see how it goes).

- Examine drop off centers to increase collection efficiency and to identify what could be done to decrease breakage of glass or color separate.
- Promote reusables options.
- Re-start recycling at local schools. Develop and implement the yellow pipeline program, encouraging children to bring recyclables to school on school buses.
- Connect recycling program to supply materials for art and design projects for local schools and individuals (use back haul of delivery trucks in-service now).
- Take advantage of local non-profit community or environmental organizations and skills to help recruit and organize volunteer labor for collecting and education people about recycling and source reduction.
- Use the Chamber of Commerce as a way to educate businesses and get the word out on programs available.
- Modify available equipment to start taking different materials.
- Identify problems in the system and work on them, whether they are policy, product, or people related.
- Examine island or regionally isolated economies. Focus on what Del Norte imports, and what could be provided locally with less or no packaging. Identify what is exported from the County, and how could this be changed to reduce costs or to add value before export.
- Promote the backyard composting program.
- Develop site for organics processing. Start the commercial organics program. Start with a few businesses and work out the design. Purchase equipment needed for a full scale program. Implement the full-scale commercial organics collection program.

Medium Term

- Sort out recyclables and reusables at a site (self-haul) Foster self haul to a central facility, or a Resource Recovery Park where there are spin-off businesses.
- Continue rate changes that encourage source reduction, composting, reusables and recycling.
- Recycling/Material type Disposal Ban.
- Re-evaluate programs, make adjustment, add additional materials if the system is capable of handling them, expand or add programs where possible.

Long Term

- Re-evaluate programs, make adjustment, add additional materials if the system is capable of handling them, expand or add programs where possible.
- Assess if additional materials could be collected.

C. Organics

Currently more than half of the material disposed of at the Del Norte Solid Waste Management Authority landfill is biodegradable or compostable. Paper is the largest quantity of organic material typically discarded for land filling.

Mixed paper when separated into paper stock grades has a value as recyclable fiber for papermaking. The recovery of paper for recycling is discussed above. Only food contaminated paper (food paper) is considered as a potential feedstock for the Organic Management Program. Food paper includes food in wrappers, paper cups, waxed boxes, molded paper and pizza boxes.

The following table lists organic materials currently disposed of daily at the landfill in Crescent City.

Table X - 2: Organic Feed-Stocks Disposed in 1997

Material	Tons Generated	
	Per Day	Annual
Food	6.9	2,485
Wastewater Bio-solids	2.5	911
Food Contaminated Paper	0.9	327
Vegetative debris (yard and Public)	0.6	201
Wood (dry)	0.3	109
Estimated Total	11.2	4,033

*Del Norte Discard Generation Study 1997

If aggregated, all these organics could be processed into a mulch. The mulch could be composted by itself or with other organic nutrients into a high quality soil amendment.

Restrictions on backyard burning should be explored as another incentive for composting materials in the future. This would be best pursued once yard waste collection or chipping services were readily available to residents as an alternative.

Storage

Some discarded food can be used by those less fortunate through the establishment of food banks. Good food that is left over, like day old bread and ripe fruits and vegetables, is collected by the food bank and distributed to those in need. All other discards will be separated and stored in three separate containers. The compostable container will be distributed to all residential, commercial, and industrial generators and will collect source separated vegetative debris, wood, food discards, and food paper. The recyclables container will include recyclable materials. The third container will contain the materials that are not accepted in the recycling or organics management program.

Collection

The franchised collector will be asked to provide three material collections for all-residential, commercial, industrial and public container site customers: recyclables, organics and garbage. The collector will price the collections based on the travel and tipping charges for each category at their designated processing locations.

The collector has two front loading compaction vehicles and a roll off truck. One truck could be used for recyclables and one truck for organics or the trucks could be divided in half. A front loading vehicle used for residential collection uses a bucket in front. In some Cities, the bucket is divided, as is the interior of the compaction vehicle. Another possible collection scenario is alternating weeks collection.

Del Norte Disposal's refuse collection route includes over 2900 stops. The five hundred commercial stops can be picked the same way or with dedicated front loading trucks using 1,2 or 3 yard bins. Self-hauled organic material will be taken to the Authority transfer station or the Resource Recovery Park. There will be a large container at the Resource Recovery Park for organics. This container will be transferred to the Organics Processing Center.

It may be more cost effective to take the two separated materials to the Resource Recovery Park and tip them into separate areas or bins and then transfer the organics to another location. This would make the Resource Recovery Park the center of the Del Norte County's Resource Recovery System.

This would also provide the possibility of capturing reusable products for resale from the organics collections (reusable wood) as well as transferring organic residuals (wet paper) from the Resource Recovery Park to the Organic Processing Center.

In summary, the recommendations for collection are as follows:

- **Residential**

- First phase would be on educating and promoting the backyard composting programs.
- Drop off sites for compostables would be made available for those not willing or able to compost in the yard.
- Self Haul will have a drop off area available for organics and food contaminated materials.
- Second phase would be to have all organics collected by the franchised hauler

- **Commerical**

For restaurants and other institutional kitchens, the potential for on-site composting should be explored through a pilot program. If such a program proves too expensive or requires too much maintenance to address health concerns, similar businesses could be targeted for collection of separated organics for municipal composting. The Authority would work with Hambro's to develop their (or an alternate) site for this material. A pilot

involving a few businesses would be started. A full scale commercial organics collection program would be implemented once the program design is developed.

- **Long-term**

If on-site composting of organics is not done in the residential or non-residential area (schools), on re-evaluation of the program it is assessed that this makes economic sense, then a collection program could be chosen to handle this material. The options for collecting are either modifying present trucks to handle two materials, garbage and organics, or organics and commingled recyclables or purchasing a new truck that can handle multiple materials.

Processing

The organics processing center could be at the Del Norte County landfill or at a privately owned site (e.g. Hambro's). If all organics are hauled to the Resource Recovery Park or container sites, the self-haul vehicle traffic to the organic processing center will be minimized.

Processing will involve:

- Inspection and removal of entrained plastics, metals, and other non-compostable material
- Grinding or shredding clean organics into small particles
- Separation of large and small particles using a trommel and screen.
- Transporting dense wood materials to the fuel user
- Spreading compostables into windrows after grinding
- Turning and wetting the windrows
- Screening finished compost for sale
- Monitoring environmental impact
- Testing final products

The grinding equipment should be able to grind 2 tons an hour to handle all the materials in one shift. Trommels and screens are relatively inexpensive. A windrow turner could be attached to a tractor or forklift. The windrows could be moistened with a water truck. A pole barn may be needed to protect the windrows from the rain and prevent blowing paper.

An example of a similar process for a similar sized waste stream can be found in Orlando, Florida. Disney World collects food discards from the entire compound, about 25 tons a day, and stacks the material in a pole barn with a concrete pad with air injection blowers. Ground up pallets are added to create a static pile over an air injector (no need to turn) that accelerates the rate of decomposition. At a certain point in the decomposition, bio-solids from the wastewater plant are added to the pile. The static pile with air injection is a more costly option but may be more appropriate to control odors and resist the impacts

of the weather. The Disney World compost is made up of ground up pallets, food waste and bio-solids. Disney sells this compost.

In many areas of the world vegetative debris is mixed with the bio-solids from wastewater plants and made into soil amendment that has a significant nitrogen content. The current bio-solids from the wastewater treatment plant and the septic collection system from outside the city could be incorporated into the compost to add moisture and nitrogen sources.

Alternatively, these materials can be shredded and put into a vermicomposting system. State of the art open bed and enclosed systems are commercially available, where worms are used to produce a high grade potting soil.

Marketing

There are several levels of markets for organic material:

- Lumber and wood recovery for reuse
- Live plants for reuse.
- Mulched leafy green material for roadsides and garden beds and erosion control
- Mulched dense woody material for bio-mass based fuel burners
- Clean Green and food compost
- Clean green and bio-solid mixed compost
- Vermicompost, or worm castings, as a high grade potting soil.

Reusable lumber and furniture could be recovered and sold at the Resource Recovery Park.

Hambro Forest Products will take all burnable material for less than the landfill fee. Mulched material can be used for roadside erosion control, or used as landfill cover. Clean green organic compost has a value for commercial farming and landscaping. Nitrogen enhanced organic compost has more value. There are local agriculture and nursery uses for soil amendment.

The Authority can be a catalyst for enhancement and development of markets for organic materials. The best market for composted organic materials will most likely be for local agricultural and nursery products. The Authority and the local farm bureau could work together and identify the current supply and demand for soil amendment. The Agriculture Commissioner and the Lily Bulb Growers Association should look for grant funds to test the impact of organic soil amendments on growing lily bulbs.

A project could be funded that involves soil scientists and agriculture engineers to test various organic mixtures to provide a positive growing medium for local crops. The University of California Agricultural Extension Program or a similar program could be asked to test and suggest recipes for growing lily bulbs, pine trees and other local products. The local nursery association or garden club could be enlisted to start a master composting program.

● Short-term Priorities

- Initial feasibility study, financial and collection plan to identify costs and critical milestones.
- Establish and obtain permission for demonstration program at Organic Recycling site.
- Establish site for Resource Recovery Park.
- Establish food bank directory and work with restaurants and grocers to provide food to them.
- Select processing system for Organic Demonstration.
- Order processing equipment for Organic Recycling Demonstration.
- Setup collection for commercial organics and drop-off locations for compostables (residential organics, including yard waste, all food waste and food-contaminated paper).
- Establish drop-off locations at the new Resource Recovery Park and Del Norte County Container Sites.
- Grind and trommel organics at Organic Processing Facility.
- Add organics and bio-solids together in pilot program.
- Obtain feasibility reports from Vermicompost system vendors.
- Experiment with local industries about use of or cooperative marketing of compost/mulch products from Organics Processing Center.
- Work with local universities from Humboldt County to southern Oregon to develop testing of organic products and their effects on soils in different applications to provide long-term baseline data needed to improve markets for materials.
- Negotiate with private industry to add composting facility for source separated organic materials at their site.
- Obtain composting permit for landfill (as backup if plans with private industry do not work out).
- Change garbage collection rate structure to provide greater incentive to sort compostables and recyclables (preferably a linear increase in rates/can).
- Consider portable chipper program with local Rental Store to encourage residents to chip their own materials, rather than burn it in their backyards. Consider financing chippers to be rented at low enough rates for residents to use them and decrease their solid waste bill.
- Consider strengthening restrictions on backyard burning in open piles in denser urbanized areas.
- Eliminate free dumping for Government Agencies.
- Work with Hambro Forest Products to be able to process commingled organics from residents, institutions and businesses in Del Norte County, including yard wastes, wood wastes, food wastes, and food contaminated paper. Obtain LEA approval for a pilot, then permit full-scale operations. Design facility primarily to receive commercial vehicles (both Del Norte Disposal and landscapers directly). Accommodate self-haul vehicles to a limited extent. Design Resource Recovery Park to have organics recyclables dropped off for a fee that includes paying for the

- price of hauling those from the Resource Recovery Park to Hambro's in a commercial vehicle.
- Negotiate with Del Norte Disposal to offer a new organics recycling service to collect all commingled organics that Hambro can process.

● Medium-term Priorities

- In order to reduce the loading on the already strained Crescent City Wastewater Treatment Plant, new businesses and expanding businesses should be required to consider composting and organics recycling alternatives as part of their environmental review documents.
- Direct all public drop-off of residential and commercial organics to Resource Recovery Park operations for pre-processing and transfer to Organic Processing Center.
- Structure rates so that economic incentive is there for public to keep materials clean and separated, with impact of higher transfer costs for solid wastes providing added impetus for reuse, recycling and composting.
- Consider residential collection program of compostable "food-paper" (yard waste, all food waste and food contaminated paper collected together).
- Consider need for chip and grind facility at Resource Recovery Park to receive and do preliminary processing of yard and food wastes directly there, to provide "one-stop shop" for general public to unload their reusable, recyclables and compostables. Transfer organic chipped materials to organic processing center.
- Require mandatory separation of compostable and recyclables after reasonable pilot period.
- Attract organics recycling businesses to Resource Recovery Park (including Used Lumberyard, Pallets Rebuilding, Re-milling of Used Lumber).

● Long Term Priorities

- Expand markets
- Attract more businesses to Resource Recovery Park.

D. Containers and Papers

In 1999, there is no mandatory garbage collection for residents or businesses in Del Norte. Del Norte Disposal, the franchise waste hauler, has nearly 500 commercial accounts, 30 of which are restaurants that use non-compacted 40 yard boxes and are collected once a week, and a few accounts are collected two times a week. The single largest customer is the Del Norte Unified School District.

Depending on the amount and size of materials, tin-plated steel cans and other ferrous metals would either be recycled at Julindra's or A-1 Auto Wreckers. It might be

preferable for tin cans to be processed by A-1, as they are more likely to be able to leverage the sale of other materials to get the best price for the sale of tin cans. Aggregation of different sources of ferrous materials by A-1 should bring some additional volume to enhance the marketing of their materials.

Although the volume of aluminum cans and other non-ferrous metals in this County may be small, the value of these materials warrants greater separation for reuse and recycling. Sorting of different types of non-ferrous metals to segregate materials for their highest and best use sale should be profitable. This is an opportunity for both Julindra and A-1 Auto Recyclers.

Del Norte Disposal Commercial Recycling Program has 35-40 customers that pay 75% of the trash price for a separate bin to recycle cardboard. Redwoods United re-established an office paper collection program (\$10 per pickup) in Fall 1999.

Residential Curbside Recycling is provided by Del Norte Disposal to 35-40 customers which pay \$3.50 a month for this non-mandatory subscription service. Containers are attached to the residential front loader garbage trucks for collection of the curbside recyclables. Because of the low participation rate in the curbside recycling service, this slight modification of the garbage trucks has been an adequate means of collection. Improved collection systems would involve varying amounts of investment, both capital and labor.

Drop-off & Buy-Back Options

The following are options for Del Norte County regarding collection of recyclables.

- **Drop-off Centers**

People in rural areas tend to gravitate on a regular basis toward a few central places such as shopping centers, schools, churches. As a result, drop-off recycling centers, to which residents bring their recyclables, are a lower cost recycling option for most rural areas. In Del Norte there are drop offs in some of these key locations and at garbage container sites in the smaller towns. Increasing the weights of recyclables at the drop off sites would be cost effective, coupled with examining the site for increased collection efficiency. In Del Norte County drop-offs have multi-material containers. Newspaper fills up long before other materials. Having a separate container for the newspaper would make collections more efficient and would make available the former news section to the next highest volume material.

Recycling drives by non-profit community groups can take place at specific times as a group's service project. When recycling markets are strong, these projects can also be fundraisers for the organization. Because of Del Norte's location to markets and presently low market rates for recyclables, fundraising is not much of an option, without any public support. The Authority could pay service organizations a premium during low market periods, to keep the continuity of these operations as fundraisers and recycling opportunities on a regular basis for the community. There could also be special recycling

collections at central locations if it is determined that this would bring in additional tonnage, and/or to educate residents about other recycling/ source reduction options.

The Authority should find community, youth, or environmental groups that will adopt recycling drop-off sites and promote those sites to their group and other community groups, distribute available educational information, and answer questions people may have about the recycling programs. These groups could have special recycling and education events to increase tonnage and could help staff tables at community events.

● Schools

The school drop-off program was discontinued following the closure of Coastline's recycling operations. Redwoods United initiated collection from school administrative offices in 1999, though the schools themselves have not had separate collection of recyclables since the school drop-off program was dropped. A project proposal with Americorps would establish a one day a week collection at each school. As the Americorps staff move from school to school for the collection program during the week days, an educational component would be done in the classrooms on that day. The children would then train the parents. All children could participate through the "Bag it and Bring it" or what has been called the "yellow pipeline" program no matter whether the student is dropped off or comes in on a yellow school bus. Bags or bins with recycling directions could be distributed early in the program. The sale of the material could be used as a fundraiser. Competitions between schools could be created to increase participation.

Materials recommended for the school program are aluminum cans, glass containers, PET (#1 plastic), ONP, OCC and office paper/mix. It is not recommended at this time to take #2 plastic (HDPE) until a consistent market has been found. Collection

- In order to reduce the loading on the already strained Crescent City Wastewater Treatment Plant, new businesses and expanding businesses should be required to consider composting and organics recycling alternatives as part of their environmental review documents. could be done with Americorps on flat bed trucks with rolling carts of source separated material. Or collection could be done by Del Norte Disposal with a multimaterial container moving from school to school. Alternatively, a mobile recycling truck could be purchased, with the truck moving to different school sites.

● Community Drop-offs

- Promote programs through community, environmental, and business groups to increase amount recycled through drop offs. Solicit community groups to adopt drop-off sites.
- Develop signage to educate and inform the public on sorting and markets.
- Strengthen processing of recyclables.
- Establish markets before expanding or continuing collection of materials.

- Examine marketability /cost benefit factors of materials being taken at these sites (e.g., plastics)
- Increase collection and unloading efficiencies of drop off containers. Add a separate newspaper box to sites that have a higher level of newspaper and collect these additional containers with commercial recycling pickups.
- Add an office pack mix to drop-off sites and publicize that service to offices in the area.
- Reduce illegal dumping to decrease operational costs of drop-offs. Follow adopted Authority policy regarding illegal dumping and make ordinance changes suggested in the policy section of this Plan to make enforcement more effective.

- Buy-back Centers

The only buy-back recycling center where customers can redeem their California Redemption Value containers is Julindra Recycling. This center also takes materials such as office paper, newsprint, magazines, and corrugated cardboard, and gives the option to quickly drop off California Redemption containers if individuals do not want to wait for payment.

Other buybacks in rural areas have found that payment for some of the recyclables will increase tonnage of all the recyclables coming into the buy-back. In addition, providing equipment and space at buyback centers for independent contractors to sort materials collected could encourage more independent entrepreneurs to collect recyclables (e.g., on a part/time basis as a supplementary income). This has worked well at West Coast Recycling in San Francisco (350 Rhode Island Plant). Individuals with high sided pick up trucks collect materials, come to the plant, have a covered area to sort, containers are provided for them to sort into, and the material is weighed and cash paid.

A good example of a site having a section for drop-offs of all materials towards the front of the processing facility, and a buy-back further back is the CCC in Berkeley. Two and three-yard bins are set up just inside the fence where individuals and businesses can drop off all the different materials that are accepted by the CCC. Behind these drop off areas is the buy-back for CA Redemption Value (CRV) materials. Someone can come in and drop off some lower value materials, and then either leave or go through the center more quickly to have their higher value CRV materials weighed for purchase. The containers are small enough to monitor quality with a staff person checking the materials

- Recommendations

- Julindra should have a staff person welcome clients and educate them on how to bring in their materials, other materials they can bring in to drop-off, and how to prepare the materials for the quickest processing.
- Julindra should set up drop off containers at the front of the site and add large signs to clearly identify what is accepted at the site (completed Fall 1999).
- Julindra should clarify the materials flow and traffic flow for the center.

- Julindra should assess whether a short sorting line is needed for quality upgrading and color sorting glass.
- The Authority should contact Berkeley's CCC and Arcata Community Recycling Center for examples of what the city pays for processing fees on material types. The Authority should consider paying Julindra a processing fee on materials that can not be sold at a market price at a rate to cover the processing and shipping of the material.
- The Authority should pay for targeted materials during low market conditions at key locations to motivate people to at least continue, and preferably increase, their recycling of those materials.
- The Authority should consider starting an independent office collection program where an individual would collect paper material from commercial accounts and have a place to sort on-site (e.g., at Julindra). Julindra could then purchase the sorted material (like the West Coast Recycling operation described above). The Authority should consider providing Julindra a base rate for material collected in this way to initiate this service, which could decrease as market conditions become stronger.
- The Authority should assist Julindra (and any others who are interested) in developing a marketing plan for their recyclables.

Residential Collection Programs

Currently, markets for recyclables are very low and transport costs are high. Even with these conditions it is important to start to compare the cost of recycling collections to the present and future cost of disposal.

Considerations for collection programs in Del Norte are:

- Collection systems costs need to be minimized.
- Collection systems need to be simple.
- There need to be economic incentives
- Public education efforts need to be targeted to Del Norte County's population.
- Public education needs to highlight economic and community benefits, both short and long term and how strengthening the overall discard management system will have long term economic benefits for sustainability.

Because of the remoteness of Del Norte County, it is important to look at other isolated counties or islands to examine what works for these places. Kauai has done a lot of work around recyclables. Tillamook, Oregon is another example. Information should be gathered to examine these island and isolated locations. Successful programs should be examined for possible applications in Del Norte County.

It is important to the efficient collection of the garbage, recycling, composting and reuse programs to design a destination site that can accommodate all of the materials being collected on the same trucks. For example, all reuse, recycling and composting

collection programs should be designed ultimately to flow into the Resource Recovery Park. Other design considerations should be the dovetailing of the residential and non-residential collection so that programs can be combined for collection efficiency and truck use. The amount of mechanization and the amount of processing capability will impact the design, efficiency, and level of commingling of the collection program.

● Residential Recycling and Garbage Collection

A front loader is currently used for the 2,400 residential garbage collection customers. It may be possible to modify the truck for two types of material. Then, depending on the program developed, this truck could take multiple materials such as wet/dry, garbage and organics, organics and commingled recycling (would need a sorting line). There is also the option of dedicating the truck one day a week to recycling collection and one day a week for garbage collection (the truck would have to be cleaned between garbage and recycling). Another possibility would be for one truck to be used to collect residential, commercial, and industrial recyclables as one integrated recycling collection route.

Another option would be the use of co-collection vehicles custom designed specifically for the needs and tonnage levels of Del Norte County. Co-collection models include:

Loveland, CO: vehicles were custom-made to have a rear loading area for garbage, and a side loading area for recyclables. The vehicle costs over \$120,000. The town of Loveland has established the cost savings of having only one truck on the road to pick up garbage and recycling. They use a bag and tag system.

Guelph, Ontario: 35,000 households in downtown core. Uses side loading, two compartment vehicles. It is a wet/dry program where the dry recyclables go to a Materials Recovery Facility (MRF). This is a more capital intensive processing program.

The design of the truck has to take into consideration how much money, or how cost effective the whole system will be, and whether the product will be marketable after processing. The Authority must take into consideration how the collection program affects the processing equipment and labor demands, and how all of it affects the value of the material ultimately shipped.

● Containers

Another design consideration and cost of a program is the containers that could be used to store recyclables waiting for collection and whether the truck choice demands a certain type of container. Some towns have put less of an emphasis on containers in the curbside collection programs, having residents use boxes and paper bags to put their recycling curbside. Some have reused plastic buckets that have come from bakeries and food production businesses. Special plastic bags either clear or a bright color have been

used in many communities for recyclables and garbage. In Worcester, MA, the different bags are purchased by the resident or business. Others believe that the container makes the recycling program work with bright colored boxes or specific types of containers such as dual material. If there is a customized truck purchased for either residential and/or non-residential, a specific container may need to be purchased.

Many towns provide these containers. A consideration on the choice of the containers would be the cost and whether the Authority could purchase them and distribute to customers or whether the customer would purchase them.

Residential Curbside Recycling

In low density areas, curbside routes typically have fewer stops than urban routes, and may therefore require less capacity. In Del Norte, curbside collection of recyclables are done on a voluntary subscription service basis. There are fewer than 40 customers at this time. Regular garbage trucks have been modified with containers attached where these recyclables can be collected, avoiding the need for a separate truck for recycling collections.

Customized co-collection garbage and recycling vehicles or trailers attached to garbage trucks are another option if curbside recycling collection becomes mandatory and tonnage levels increase. These options would make it possible to handle garbage and recycling in one stop. Customized trucks are an expensive option with trucks costing well over \$120,000. With customized trucks it is important to have careful bin sizing. Ideally, the design would be flexible to adapt to changing conditions of market specifications and other changes so that one material overflow does not generate the need to return to unload while other material sections are half full. Other considerations are light-weight, good mileage, large capacity and on-board compactors or cages.

Curbside collection would be a higher cost to local residents than drop-off collection, which offers lower convenience. Often small towns make the mistake of investing in curbside recycling because the urban areas are doing curbside collection and think they should instead of comparing all the options to find the best for that town. Low density areas make curbside very inefficient and costly if it is done in separate trucks. If there is only a small amount of recyclables, a processing center may have too little to process cost effectively, and materials should be collected in a form requiring a minimum of processing. Source separation of materials may be less convenient for residents (or businesses) and may result in lower collection weights, but it is a cost effective way to ensure higher quality of recyclables and to minimize the investment needed in processing equipment.

Customized co-collection vehicles or trailers behind garbage trucks are the two options for efficient garbage and recyclable collection making collection more efficient in rural and small town settings. Sorting the containers at the curb is also a way to reduce the need for investing in sorting lines and maintaining a high quality of material.

Del Norte County could examine whether garbage collection has to be weekly. Every other week garbage and recycling collection may be an option, which is being used

increasingly in Europe, particularly with food waste composting programs. This would require an ordinance change, but could result in a more cost effective collection operation with increased participation in both recycling and composting.

To begin down the path to Zero Waste, the following changes are recommended for the collection system in Del Norte County:

● Recommendations

- Drop-offs are the first focus for the residential recyclables and the lowest cost.
- Work with Julindra Recycling to develop the capacity to sort commingled recyclables, including all beverage containers, newspaper, cardboard, office paper and glass.
- Negotiate with Del Norte Disposal to expand their curbside recycling service and drop-off recycling centers to collect all commingled recyclables that Julindra can process.
- As disposal costs will require adjustments in the garbage collection rates, decrease the rate for curbside recycling so that the cost to residents of subscribing for the collection of one garbage can and curbside service is less than the cost for two garbage cans.

This three sort collection system (garbage, recyclables and organics) will provide residents, institutions and businesses alike with improved convenience for recycling, and will encourage them to choose to reuse and recycle through the structure of garbage rates.

Non-Residential Collection

It is important to examine local institutions, recreational areas, fairs, local manufacturers, local businesses and other seasonal businesses for a waste assessment to design programs to recover the most marketable recyclables. Targeting institutions, businesses, special events and seasonal waste streams would target over 60% of Del Norte's waste stream. Grouping non-residential institutions would more clearly identify what types of collection programs would most effectively recover these discards.

In Del Norte, institutions include the prison (according to Del Norte Disposal, they recycle everything with only organics remaining), state and national parks (with seasonal demands), schools (seasonal demands), restaurants (seasonal demands), and other businesses. Clear assessments of what could be source reduced, what can be reused, what can be recycled, what can be composted and which are the most cost effective options should be done.

In Del Norte, there is an office paper and cardboard recycling program. Presently the office paper collection has few customers taking advantage of recycling through this program. What would it take to make the other non-recycling institutions join the recycling programs? A survey could be conducted either through the garbage bill or by telephone asking businesses what types of materials they do recycle, what types are available to

recycle, whether they know about the different recycling programs, whether they are interested, and what they would need to start an office paper collection program in their organization. For example, according to the discard generation study, only 10 percent of the highgrade white ledger in Del Norte was recovered in 1997.

The Authority could develop a cost-effective office paper and cardboard (OCC) program by having offices collect a mix of office paper in reusable bags which the Authority could make available. Bags filled with office paper could be placed in the OCC container. When that material arrived at the processing center, the bags would be pulled from the OCC. This would reduce the need for two recycling collections at the same office location.

Designing the mixed paper collection program so the product is salable is critical. The tonnage levels available do not warrant the purchase of a sorting line to upgrade the material. Confidentiality of the documents collected for recycling is an issue in Del Norte where law offices and other generators may not have a shredder. These offices feel it may be less of a risk if the material goes to the landfill. This concern would have to be addressed to convince these potential recyclers. Confidential destruction is a natural adjunct to a recycling collection and processing program but would entail another level of training and design of an appropriate collection system.

Other options include:

- Use a stake-bed truck and trade out 90 gallon rolling disposal carts (The Authority owns 100 toters) of office mix and/or white ledger.
- Group a number of the small non-residential sites together so that one container could be used to recycle the paper and OCC for multiple locations.

The Authority is examining the office paper collection to see how all of this could be packaged in a way that would attract an entrepreneur to start a collection program. Charging the non-residential sites and selling the material to the processor (presently there is no payment for this material) would pay for this program.

Education of all employees, establishing an educated, responsible contact person who would maintain the program on the inside of the organization, and changing custodial agreements to include responsibility of recycling are all parts of this program. Having the unrecyclable container being a "mini-can" and the recycling containers be much larger helps to change the psychology of discards within the organization.

Portable Processing and Collection

When large appliances, other metals, tires, and wood brush need to be collected there are other options than just picking up the materials and taking it to a processing center, such as:

- Appliances and other metals could be densified using a portable densifying machine with a flat bed truck to carry away the processed and baled metals. Materials would be ready for market as they are collected.

- Tires: a portable shredder or tire baler could make collection more efficient and product ready for market use.
- Wood brush: a portable chipper could roam the streets chipping brush for mulch or composting use on-site, or be shipped away for co-generation use.

E. Metals

Metals represent one of the immediate challenges for Del Norte County. Due to dramatic recent decreases in the prices for metals sold by scrap processors in the County, metals recyclers require assistance in marketing their materials and improving the efficiency of their processing. Local discarded resources that include metals which could be reused or recycled are:

- Cars
- White Goods (e.g. refrigerators, washing machines)
- Industrial scrap (e.g. steel beams)
- Dismantled Structures (e.g. pipe, fencing, metal sinks and bath tubs)
- Tires (5 pounds of each tire is steel belt)
- Couches and Mattresses (springs and frames)
- Small Appliances
- Freon, which although is not itself a metal, is recoverable and is found in refrigerators, freezers, and air conditioning units

The following is a description of how those metals could be reused and recycled. Most of these materials would be recycled more if there were improvements to the collection, processing, hauling and/or markets for these materials.

Cars

Scrap auto bodies, whole and in pieces, are being stored on private property and littered throughout the County illegally, causing a serious blight on the landscape. With the new Abandoned Vehicle Abatement Authority Abatement Program, this problem is being properly addressed for the first time in many years. Cars are being collected by the Abatement Program, and brought to A1 Wrecking Yard, where they are being compacted for shipment and sale to markets. In 1999, this program facilitated the private towing of 496 vehicles from public property and the public towing of another 20 cars from public lands or roads.

Unfortunately, prices for auto bodies have decreased dramatically this year, decreasing the economic viability of the current system. It appears that the best solution to this marketing and processing problem would be to obtain a high-powered baler to compact the metals received. This could be done in one of two ways:

- A-1 Auto Wreckers negotiate with Cascade Auto Recyclers to have their portable baler periodically bale their auto bodies prior to shipping.
- A-1 Auto Wreckers obtain their own new or used stationary or mobile baler, financed with a low cost loan through one of the financing tools discussed below (e.g. USDA Business and Industry Loan, SBA Environmental Business Loan Program, Recycling Market Development Zone loan together with Humboldt County auto recycler or AFL-CIO Business and Housing Trust)

Alternatively, some improvement in the trucking service, shipping auto bodies out of Del Norte County to markets, might provide a greater profit margin than currently possible. Unfortunately, there are only a few options for trucking these car bodies, and there were no clear back hauls identified that would be able to help with this transportation problem.

Once the processing and marketing of auto bodies is resolved, then the collection of the remaining backlog of auto bodies needs to be addressed, and an on-going system established to minimize the illegal dumping of these in the future.

In many other communities, auto recyclers have worked with non-profit groups to arrange for the donation of nonworking autos by residents to non-profits for a tax deduction. The non-profits establish a relationship with an auto recycler, who processes the cars and sells the parts and materials for reuse and recycling. The non-profit gets a percentage of the revenues from sale of parts and materials, and the resident's tax deduction is usually more than they could get by selling the car directly to the auto recycler.

White Goods

White goods include refrigerators, washing machines, ovens, water tanks, clothes driers, and similar large appliances which do not usually fit into garbage cans for easy disposal and are costly to self-haul to the landfill. To build on the successful cleanup of these items during the 1998 free metals recycling events, an ongoing collection of white goods is needed. Four options are suggested:

- **Drop-box at Container Sites** - A 40 cubic yard roll-off container could be located at the container sites in Gasquet and Klamath, at the landfill and future transfer station, as well as new sites at reservations and the intersection of North Bank Road and Rt. 101. White goods would be deposited in those drop-boxes and collected on a periodic basis as needed (probably monthly). Fees to dump white goods at these locations would be kept as low as possible (if not free), to encourage the flow of these materials to these locations.
- **Reuse Sheds at Container Sites** - Either in addition to the above, or instead of the above approach, construct simple pole barns or metal sheds at the above locations to attractively store white goods (and other reusables such as couches, mattresses

and furniture) received. These would be combined with other reusable products discussed elsewhere in this Plan, to be sold (or offered for free) to anyone who wants them. This is based on "Free Tables" set up in some communities to foster the free sharing of one person's excess products, for someone else's use (this is particularly used for household hazardous wastes).

- **Reuse and Repair Businesses Accept White Goods** - Similar to the above systems, the Authority could contract with one or more Reuse and/or Repair businesses to accept white goods (and other reusables such as couches, mattresses and furniture) from the public, for a fee. The fee could be paid directly by the residents, the Authority, or shared by both initially, until the volume of this activity is better known.
- **"Free Dump" Day** - Once the baler improvements at A-1 Auto Wreckers are accomplished, the Authority could encourage A-1 to offer a "free dump" day on a monthly basis for businesses to bring their nonworking scrap metal devices.

The markets for these white goods would be enhanced by the processing improvements recommended for A-1 Auto Wreckers. Nonrepairable white goods could be included in the larger bales that such equipment would make, and sold together with the scrap auto bodies.

Industrial scrap

Throughout Del Norte County there are many piles of metals on industrial properties, which include such things as: equipment parts, metal fencing, metal building parts and steel beams. The backlog of these materials is being addressed now as part of the Abatement Program, but needs a better system on an ongoing basis.

As noted with white goods above, once the baler improvements at A-1 Auto Wreckers are accomplished, it is recommended that the Authority encourage or contract with A-1 to offer a "free dump" day on a monthly basis for businesses to bring their industrial scrap metals.

- **Dismantled Structures**

These products include pipe, fencing, metal sinks and bath tubs and would benefit by a system established above for white goods and industrial scrap.

F. Couches and Mattresses

Del Norte County needs to have an enclosed drop-off system in place for these products when people are moving in/out of their homes and businesses. This service needs to be very accessible and convenient for people who are moving. One or more of

the options discussed above under White Goods needs to be implemented to provide a good home for these products.

Reusable couches and mattresses should be encouraged to be reused however possible (see options under White goods above). In addition, couches and mattresses could be dismantled and their component parts used or sold. The latter is being done in Alameda County today. This would be a good opportunity for a project of the Prison Industry Authority.

G. Small Appliances

These are similar to white goods, couches and mattresses. In addition, repair services could be fostered by advertising those that are available, and helping to train the next generation of repair staff. A program could be instituted with one or more local repair shops, or negotiated with the Prison Industry Authority, as a project that they could undertake.

H. Polymers and Mixed materials

Tires

Although tires disposed at the landfill are reused to hold down tarps, disposal costs range from \$9 - \$27 per tire. Tires are probably the single most visible item that is illegally dumped in Del Norte County. As five pounds of each tire is a steel belt, this is an opportunity to address the metal recycling potential of tires and associated issues. The Authority has secured a tire grant from the CA Integrated Waste Management Board (CIWMB) to provide a free tire amnesty at four locations throughout the County. The authors recommend that in future, any business which sells tires in Del Norte County be required to takeback tires from that customer. A separate future grant from the CIWMB could be used to assist local tire retailers with the startup costs for needed storage containers, hauling and processing services need to be established to properly implement this takeback ordinance.

Major potential end-uses for tires include: baling tires using Humboldt County's mobile tire baler for soil stabilization, producing crumb rubber for use in molded rubber products or rubberized asphalt.

Plastics

Plastics make up 6% percent of the discards disposed of in Del Norte County. About four tons a day of plastics are discarded each day in Del Norte County. This makes about 1,200 tons per year.

Table X -3: Del Norte Plastics Disposed in 1997		
Type	Annual Tons	Day
HDPE	119	.3
PETE	92	.3
LDPE	399	1.1
Durable	174	.5
Other	445	1.2
Total	1229	3.4

PETE is sold as commingled PETE or #1 plastic at a price set by the Department of Conservation, Division of Recycling. Current prices are about the mid-30-cents-per-pound rate. Most PETE containers in the waste stream are food and beverage containers.

HDPE and LDPE are polyethylene's and can be sold separated and have the highest value in the non color state. Almost half (1.4 tons per day) of the plastic is ethylene. HDPE or High density is primarily found in containers for milk and food products and detergents and motor oils and have thick walls. LDPE or low density is made up of shopping bags and other bags and wrappings.

The other and Durable categories must be graded to have value.

- **Policy**

Plastics should be included in the storage and collection programs for recyclable materials. Generators should be encouraged to flatten plastic to reduce air space taken in storage and collection.

- **Processing**

Plastics like mixed metals need to be separated by resin type to command top price in the secondary materials market. Processing includes separation of materials by resin type and baling for load limits for long haul to San Francisco or Portland. The baler should have a perforator to allow for maximum densities.

The most marketable of the plastics is PETE. When baled, the revenue will exceed the cost of collection, processing and haul.

There may be a reuse value in durable plastics. These items include: planter pots, toys, computer casings and tires.

Although the polyethylenes, (HDPE & LDPE) have markets and value, the price of collection and haul may not pencil out. However, there are many examples of enterprises that grind and press ethylene based plastics into usable products. Recycling and composting bins are typically made of polyethylene based materials. Ethylenes could be mixed together and ground into small particles and melted into a dough. The melting point of plastic is very low and needs little heat and has minimal emissions. The dough

is placed on a hydraulic press and a product is formed. This labor intensive industry could provide jobs from a feed-stock that was formerly landfilled.

- **Marketing**

Markets for PETE are already established. Reusable and repairable plastics should be self hauled to a reuse center. A feasibility study with EPA Jobs Through Recycling (JTR) grant funding should be explored. The American Plastics Council is also interested in providing equipment to agencies that will look for local based industries for recycling plastic.

Short-term Priorities

- Procure baler that will perforate plastic in high density bales.
- collect and sort plastic to grade
- feasibility study for ethylene based plastic products
- create reuse center for durable plastics

Mid-term Priorities

- provide feed-stock to local plastic manufacturer.

XI. Facilities & Related Programs

The Authority should identify the pool of experienced business owners and work with them to expand, modify, and diversify their businesses to include the use of secondary resources as feedstock. Working with new business start-ups that are riskier than working with existing businesses with established, bankable track records, should be a second priority and longer term strategy. Those facilities which are unlikely to be developed by the private sector must be spearheaded by the Authority to establish a viable regional recovery infrastructure.

A. Transfer Station/Material Recovery Facility (TS/MRF)

With the imminent closure of the Del Norte Landfill, the Authority has directed staff to create a TS/MRF, which would "...offer the same types of services as the landfill now offers County residents." The following functions are being incorporated into the design and permitting for the TS/MRF. There will be two phases to the construction process and the operator will be involved in the design (see charts below), as they will have some flexibility and incentive to increase material recovery and decrease disposal. The Authority plans to own the site and building and permits, and will contract to a private company for design, operations, and permit administration. The Authority will also own at least two years of disposal capacity, but will provide a contractual incentive to have the TS/MRF operator continue to seek out and use less expensive, legal, environmentally sound disposal.

Functions & Elements, Policies & Objectives

This is a summary of the Authority Board's direction to have the TS/MRF "offer the same types of services as the landfill now offers County residents," the functions in the table below will be incorporated into the design and permitting process for the Transfer station / materials recovery facility. Note that the TS/MRF is envisioned as a two-phase construction process, and that the operator would be involved in design and will have the flexibility and some incentive to increase material recovery and decrease disposal. The Authority would own the site, building and permits, and would contract to a private company for operations. The Authority would also own at least two years of disposal capacity, but give a contractual incentive to have the TS/MRF operator continue to seek out and use less expensive, legal, environmentally sound disposal.

Table XI - 1 : Phases of Del Norte Transfer Station / MRF Development

Phase 1: Now - 2002			
<u>On-site:</u> Scale / Scale house Self-haul refuse dropoff Wood & brush dropoff Animal dropoff / storage Sludge processing & storage (Skimmings, screenings, & sludge) White goods, refrigerators, bulky item processing Administration offices Tires dropoff / storage HHW (oil, batteries, paint, anti-freeze) Facility for transfer trucks	<u>On-site Private Options:</u> HHW Facility Salvage / resale Any Phase 2 function Operator recovery Processing recyclables	<u>Plans / permits:</u> Siting Element Waste Gen. Study Markets studies RMDZ expansion Recovery Directory CEQA document WDR from RWQCB AQMD review Coastal grading Conditional use SWFP from CIWMB Tire facility Compost facility HHW permits	<u>Other facilities:</u> Composting Auto wrecking Oil buyback
Phase 2: 2002 -			
<u>Additional On-site, if not implemented in Phase 1:</u> HHW Facility Salvage / resale	<u>Potential Private, location uncertain:</u> Dropoff / buyback Construction Mat'l recovery & resale Textiles recovery Paper shredding Composting Baling & grinding Sorting Line Volume Reduction	Auto dismantling	

B. Resource Recovery Park

The Resource Recovery Park will be a central facility to which the public can bring all their recoverable materials at one time, to decrease their wastes (at a lower tipping fee than the Landfill), recover some value from the sale of their most valuable materials and buy other items of value from the retail stores at the Park. The Resource Recovery Park will be designed to receive source separated recyclables, organics, construction and demolition debris and reusables to process, reuse, recycle and sell. The Resource Recovery Park will have a variety of reuse, recycling and composting businesses colocated in one area, that will derive efficiencies from working together. For the public, this will be a one-stop service center for reuse, recycling and composting. For the businesses in the Park, it will be a way to simplify expanding or starting new services (e.g. by having a Master EIR approved in advance to cover most

anticipated Park activities) and provide an opportunity to share the overhead, equipment and operating risks. For the Authority, this will be an opportunity to decrease the self-haul traffic to the current landfill, directing people to the Resource Recovery Park first with all their recyclables, and encouraging the public through the rate structure at the Landfill/Central Transfer Station, to keep their materials separated for reuse, recycling and composting, rather than paying increasingly costly disposal fees.

Discard management companies within a Zero Waste Resource Recovery Park can be organized into four groups:

1. Reuse: salvage, repair, rehabilitation, and retail sales for reuse items.
2. Recycling: dropoff, buyback, and curbside collection for source-separated or lightly mixed materials including cans, bottles, paper, textiles, scrap metals, and polymers.
3. Composting: fee-based collection and processing for plant debris, wood, soils, ceramics, mixed demolition debris, food paper, and putrescibles, including discarded food.
4. Processors and manufacturers adding value to recovered materials.

In physical layout, the resource recovery park should put reuse first, recycling second, composting third, and wasting last. Each module ahead of the wasting one will need to provide a small waste-handling and transfer capacity. The more effectively residents are trained to use the new system, the less waste there will be to handle at the tail end of the process.

In managing the Resource Recovery Park, it is important to let the market determine the details of where, how, and to whom materials move. Source separation principles should govern, along with convenience, cleanliness, and satisfying the customer.

It is axiomatic in recycling practice that the more the discard supply is separated into discrete subflows, the more money there is in the system. As the Resource Recovery Park succeeds in its mission to attract and nurture businesses that add value to discarded feedstocks, the number and variety of such businesses can and will grow.

There should be room in such a Resource Recovery Park for many small operators. As a customer draw, clustering small with large operators is a well-proven commercial principle, as any visit to a mall will attest. There, specialized vendors of all sizes meet to offer wares and services to crowds of customers, many of them out just to explore the environment and spend a little money. If they were run as isolated businesses, most of these enterprises would fail. But within the managed competition and cooperation of the mall environment, they thrive.

The same forces will drive the proposed Resource Recovery Park. Companies will become suppliers to one another, partly to shave overall disposal costs by taking advantage of opportunities to recycle, partly to increase their cash flow, and partly just to build friendly networks in anticipation of beneficial trades to come. Information will

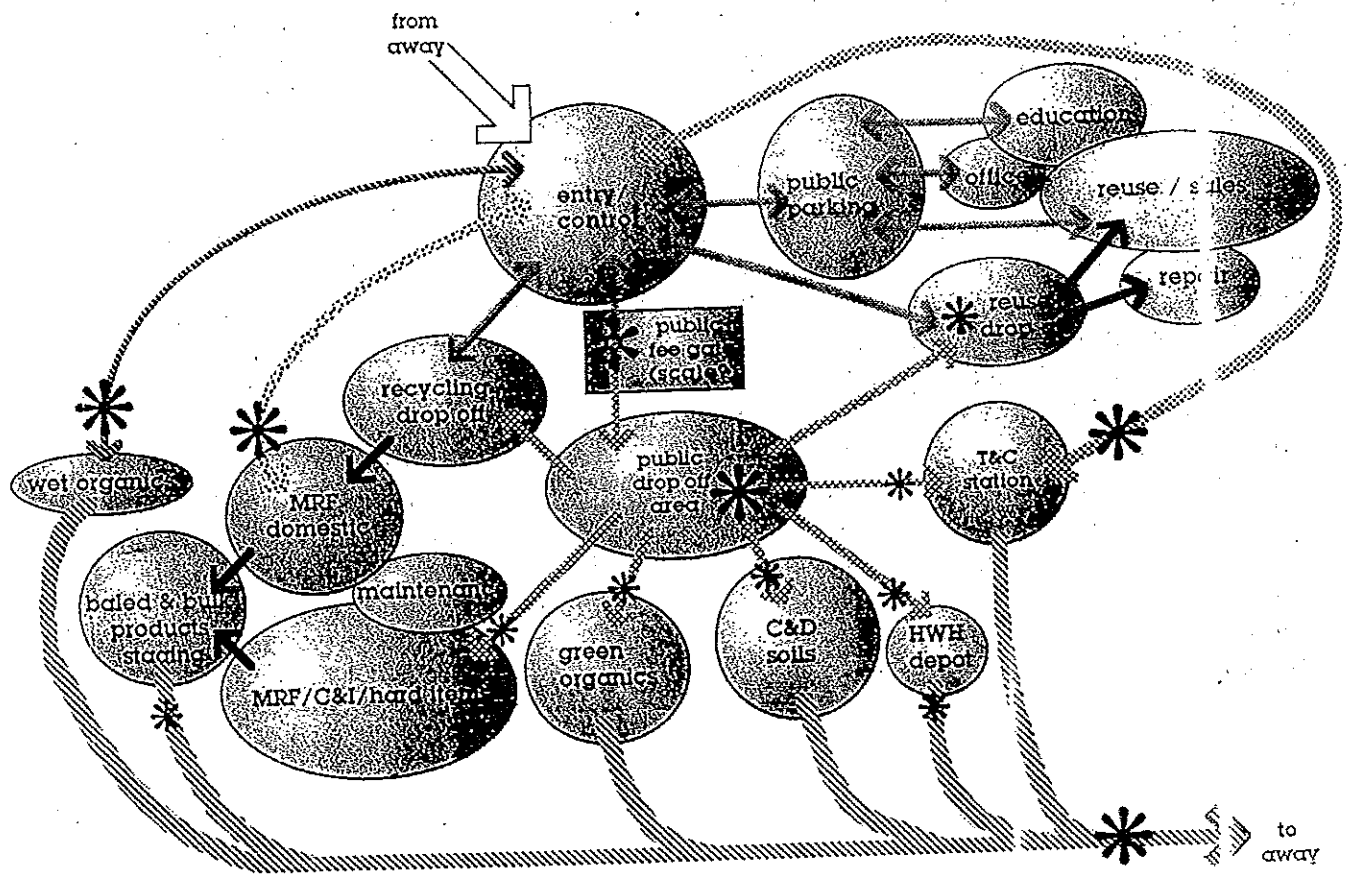
pass readily among businesses, and all will enjoy new opportunities to learn from one another the latest and most advantageous techniques.

As the combined operation attracts more trade, the presence of so many people will create new niches for support businesses such as restaurants, accounting and legal service providers, insurance companies, maintenance companies, training firms, and radio and telephone communications systems. A business ecosystem will gradually emerge that feeds on resource flows from the larger economy, adjusts to surges and droughts, and dries up waste before it has a chance to happen.

In addition to reuse and recycling businesses, the Resource Recovery Park will provide administrative support (e.g. computers, phones, bookkeeping, accounting and legal services) on a shared basis for a fee, shared equipment (e.g. fork lift, balers, wheel loaders, trucks), shared knowledge and technology (facilitated networking among Park tenants on how to address technical problems), shared showroom for retail sales and temporary staffing support (including training area for new staff and for tours). Once the basic operations are underway, such a Resource Recovery Park should be able to attract retail stores and consignment stores for materials and products recovered and a restaurant/snack bar for Park businesses and customers.

Depending on the location of this Park, additional benefits might include a nature trail, demonstration sites (e.g. use of compost products in gardens, on-site composting bins for residents and businesses, demonstrations of recycled building products in use, integrated pest management and water conservation) and an environmental education display/museum as an additional attraction for residents to come.

Figure XI - 1 Sample Activities Diagram for a Resource Recovery Park.

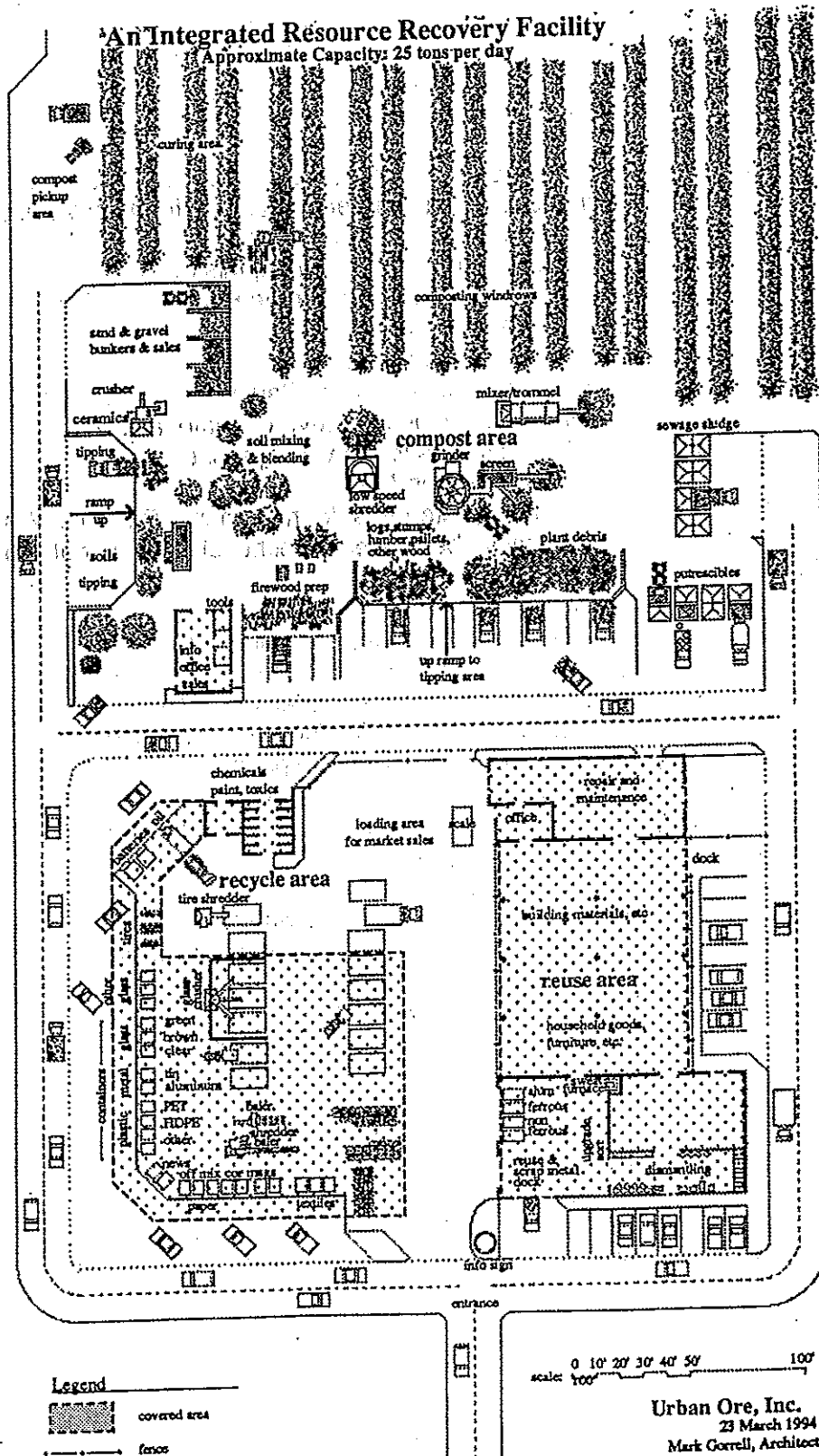


Legend

- public movement before fee gate
- public movement past fee gate
- materials movement on site
- curbside recycling truck movement
- garbage truck movement
- special hauler movement
- materials removal from site movement
- scale

ACTIVITIES DIAGRAM

Figure XI - 2: Sample Site Plan for a Resource Recovery Park



Resource Recovery Park Amenities

Additional resources should be spent to make the Resource Recovery Park (RRP) a destination point. In other words, there should be many reasons why the local population and visitors would want to drive to the Park. Areas should be set aside to hold these activities which can be built as tenants actually locate to the Park. Costs to develop these areas should be identified immediately and built into the overall costs of the Park, even if they won't be built until some future time. Funding for these areas need not come from solid waste funding sources. For example, the Park and Recreation Department could provide funding for a children's playground and small amphitheater. Of course, this means including other government departments into the planning process for the Park so they buy into the concept. Here are some examples of possible site amenities:

- **Resource Incubator**

The first step of implementing an Resource Recovery Park would be to develop an incubator for new recovery businesses which add value to recovered materials. The RRP will provide a lower cost environment for such businesses to grow and prosper.

- **Demonstration Site**

Develop a compost / native plant / Integrated Pest Management / Recycled Water demonstration garden. This area might be located on either side of the pathway to the main entrance of the Resource Recovery Park.

- **Showroom Outlet**

Develop room to showcase products manufactured, remanufactured at this site and for other reuse/recycled content manufacturers in from the Border Coast. Products would be available for sale from the Showroom and guides would be available to other resale/stores to purchase other merchandise. The artist in Residence would also show work and temporary displays could be used to show children's environmental theme projects.

- **Artist in Residence Program**

Develop area for workspace for artist in residence. Some space in the demonstration garden could be set aside for sculpture especially art from scrap.

- **Nature Walk**

Develop pathways, interpretive and warning signs, viewing platforms near points of interest (e.g. old logging ponds, lakes, animal habitat) — all built from reuse/recycled content products and act as a place for community education

- **Children's Playground**

Develop playground equipment, surface finish, fencing — all built from reused or recycled content materials

- **Amphitheater**

Develop a small outdoor amphitheater for summer programs — arts and nature — provides for the opportunities Recycletown in Sonoma provides.

- **Classroom Facility**

Develop at least one classroom that can used to host community programs from Master Composter / Commercial Auditor to art classes to nature interpretive courses.

Types of Incubators

An incubator for new recycling businesses could provide a lower cost location for these types of business to grow and prosper. There are different types of incubators that could be implemented in the Resource Recovery Park, including:

- **Graduating Incubator**

In this type, the start-up business is provided with certain resources that are shared among the other start-ups. These services include but are not limited to conference rooms, copiers and faxes, receptionists, bookkeeping, business technical assistance such as review of business and marketing plans. The goal of the incubator is to support its businesses until they are strong enough to move to their own location.

- **Non-graduating Incubator**

In this type of incubator, the management organization supports the start-ups until they are strong enough financially to purchase the facility and become fully independent. In this model a single agency, non-profit, or business could be the incubator administrator, or several businesses could co-own the facility.

The Border Coast should develop one or more Incubators to support Reuse and Repair industries. An example of this "Resource Incubator" would include a central drop-off site for reusable goods. Other value adding businesses would use these resources as feedstock for their operation. For example, an electronics repair shop, a household appliance store, a furniture store, vintage clothing and consignment shop, a household item thrift shop, a stove and porcelain refinisher, an antique restoration firm, an eco-artist and other businesses would co-locate around this drop-off center. This incubator should start with enough room for 40 businesses and include all kinds of "Re" businesses, repair, reuse, refinish, rent, restoration, restore, etc. and of course some recycling businesses.

The Authority would identify sites for this Incubator, support the growing or creation of new businesses by providing grants and other management services and act as a central point for business attraction and marketing of this new center. The Authority could also provide initial rent supports and technical assistance in the form of business and marketing plan review, bookkeeping and tax advice. This service would probably be given under contract to a CPA or Small Business Consultant rather than by Authority staff. A non-profit organization could be created to manage the operation with oversight provided by The Authority.

Potential problems from this type of facility include illegal dumping, marketing and attracting foot traffic (customers). The Authority should continue to provide support by subsidizing the cost of collection and disposal of illegally dumped garbage and by covering the costs of marketing the "Re" businesses. The Authority could sponsor annual or semi-annual Re-Fairs to alert the community and tourists to the Resource Recovery Park. The County could support this type of service to the community by fast

tracking permitting or waiving permitting and development fees. A portion of the sales tax derived from the resale of items that used to be landfilled could be used to cover the costs of managing the incubator.

An incubator could stand alone or be co-located within the Resource Recovery Park described above. This is proposed as a "non-graduating" incubator, designed to have successful businesses to stay in this park, with new businesses beyond the original ones being accommodated in locations adjacent to the initial incubator facility, or by moving some of the shared services (e.g. restaurant, showroom) to adjacent buildings.

Next Steps for Resource Recovery Park

There are a variety of ways that this Park could be established, with different roles for the Authority, including options in which the Authority:

- Conducts a Feasibility study to examine which clusters of recovery businesses would most likely benefit from locating within a Resource Recovery Park, develops a sample site layout, and administrative handbook. These key tasks will be completed through a Resource Recovery Park Feasibility Study, funded in part by a grant from the US Forest Service. (Anticipated completion: September 2000)
- For development of the Resource Recovery Park, prepare a Master EIR for all anticipated uses in the Park so that individual businesses will not need to prepare an EIR before siting there.
- Assign and budget for staff to work with all businesses siting in the Resource Recovery Park and vicinity, including: expediting permitting; dealing with local, state and federal regulators (air, water, solid waste); highlighting the public purposes of this project with planning and zoning departments; commenting on site layout and leveraging of local resources; help for start-ups; setting up tax systems and generally assisting the entrepreneur to focus on their business and not get bogged down in regulations and paperwork.
- Secure land and building for Park, obtain permits for Park and lease space to tenants.
- Arranges access to land and building under a long-term lease (possibly with option to buy), obtain permits for Park and lease space to tenants.
- Adopts policy and encourages private investor or existing nonprofit to develop Park.
- Establishes a new Nonprofit to develop and manage Park, with Board of Directors including all businesses in the Park
- Establishes a Coop to develop and manage Park.
- Pursues a combination of the above, as a public/private partnership.

The Authority should consider the interplay between the contract for operations of the Landfill (and later the TS/MRF) and the Resource Recovery Park. Disposal and

TS/MRF policies and operations should support the development and expansion of the Park. To do this correctly, payment for TS/MRF operations should not be based on \$/tons landfilled. Instead, the contractor of the Central Transfer Station should be paid based on the quantity of materials discarded at the TS/MRF. Any increase in reuse and recycling at the TS/MRF, whether these materials are processed at the Resource Recovery Park or elsewhere, will reduce the Operator's hauling and disposal expenses.

Administration of the Resource Recovery Park will require skills in marketing, management, recruitment of businesses and community. The park functions could be assumed in part by the Authority staff, or contractors, for the following functions: site owner, scalehouse/gatekeeper, Park Manager, Retail Stores and Administration.

Table XI - 2 What Goes Where?

Landfill/Central Transfer Station

- Mixed Solid Waste/Garbage from Residents, Institutions and Businesses, Self-Hauled or brought in Commercial vehicles or debris boxes (if it looks like garbage, it goes here)

Resource Recovery Park

- Source separated Recyclables, Organics, Construction & Demolition Debris, Self-Hauled or brought in Commercial vehicles or debris boxes (if it looks like recyclables, it goes here)
- Reusables

Rural Transfer Stations

- Mixed Solid Waste/Garbage from Residents, Institutions and Businesses, Self-Hauled
- Source Separated Recyclables, Organics, Construction & Demolition Debris and Reusables

Other Facilities

- Julindra: Source separated and commingled Recyclables, direct from public and from Del Norte Disposal
- Hambro: Source separated organics, including yard wastes, wood wastes, food wastes and food contaminated paper, in commercial vehicles from Resource Recovery Park, transfer stations direct from public and landscapers and t
- A1 Wrecking: Cars, white goods (from transfer stations) and tin cans (from Julindra and direct from public)
- Thrift Stores: Reusables and textiles direct from public
- Repair Shops: Large and small appliances, from Resource Recovery Park and direct from public
- Takebacks: Grocers for beverage containers and plastic bags; tire retailers for used tires

XII. Residuals & Disposal

A. Garbage is an Unfunded Mandate: Policies for Residuals

Unfunded mandates are laws passed at the national and state level which place additional responsibilities on local communities without a mechanism to pay for the required programs. Trash disposal is an unfunded mandate in that the local requirements for litter cleanup, as well as the costs for establishing, maintaining and closing collection, transfer, and disposal facilities can only be paid by additional local user fees or taxes. Section VII. D. includes recommended policies related to residual materials, service voids, and service opportunities.

B. When Disposal Is the Best Option

For some discarded materials which pose a threat to public health or the environment, disposal may be the best currently available management option. For example, the Crescent City Landfill currently has specific handling and disposal procedures for non-friable asbestos and treated, contained medical wastes. Until recovery technologies are available for these materials which do not increase the risk to public health or the environment over landfilling, these materials are best landfilled - even under a policy of Zero Waste. A fully-implemented Zero Waste program would, however, collect the disposal fee at the point of purchase so products which are more expensive to handle as discards have a matching increase in purchase price.

C. Disposal? In a Zero Waste Plan?

As important as planning for future expansion of recycling and resource recovery is, the Authority has limited resources. Since 1987, the North Coast Regional Water Quality Control Board had a Cease and Desist Order over the Crescent City Landfill, and one of the principal responsibilities of the Authority was to plan and pay for the phased closure of this facility - at a cost of over \$3 million dollars from a community of 30,000 and a median household income some 30% lower than the State average¹⁴. The mandated post-closure maintenance costs for the landfill - which are normally funded by funds set aside for financial assurances - remain as a pledge of revenue from a facility which is not yet built.

The Authority should be a strong advocate for landfills to meet the highest environmental standards required by law to level the playing field relative to waste diversion activities and to regain the public's trust. Best available control technology should be used to comply with State and Federal standards. The Authority should be a strong advocate at the State and Federal level for the most stringent standards

possible and should support an aggressive enforcement of the State Minimum Standards for Solid Waste Facilities.

The path to Zero Waste will be made by taking one step at a time. An essential message of this plan is that managing discards as wastes creates material and energy inefficiencies by ignoring the future private and public costs of replacing those products and materials which have been wasted.

Simultaneously, materials processing often concentrates and comingles residual by-products. For example, when a recycling center removes contaminating materials from papers collected for recycling, the small and mixed bits of residual materials removed are considerably more difficult to recover. Almost by definition, such process wastes are more co-mingled and contain a negligible percentage of usable materials. The characteristics of this and similar residual streams will vary depending on the effectiveness of the generators waste prevention programs, the processes involved, separation costs, the geographic location of the waste, the sophistication of the recycling infrastructure, and economics.

Management of such process wastes for the medium term future may still include technologies such as landfilling (intermediate to long-term treatment and storage) and incineration (waste-to-energy). Two residual management alternatives that have promise to improve traditional landfilling are bioreactors and cleanfills.

Bioreactors are lined waste management units (in compliance with 40 CFR Part 258, RCRA Subtitle D) that recirculate leachate to decompose and stabilize waste faster and more completely than can be accomplished in a dry-tomb landfill. Landfill gas would be collected and utilized to produce thermal, mechanical, and electrical energy. Once the wastes were treated/stabilized and an economical end use was identified they could be mined and processed to make room for new waste. While it is not necessary to separate inert from putrescible wastes it makes the operation of the bioreactor more efficient and makes it easier to recover the end products (soil products and recyclable materials).

Bioreactors are being designed and tested at a number of locations nationwide with promising results. It will be important to keep track of the waste types and quantities that are placed in these waste management units so that future end uses could be identified. If the wastes were shredded before being landfilled they would break down faster and be easier to process when they were mined. Leachate injection and gas extraction systems should be installed as the waste is placed.

The second alternative is referred to as a cleanfill. This is a management alternative for inerts such as glass, concrete rubble, asphalt, glass, plastic and other specialty industrial waste streams. If an immediate economic end use (such as a road building or agricultural applications) could not be identified these inerts would be landfilled (stockpiled) and mined, as needed, in the future. This type of waste management unit would probably not require a liner and would only accept selected, non-putrescible wastes. Recovery operations could be made more efficient if wastes such as plastics were baled prior to landfilling, specialty wastes were segregated, and the quantity and type of materials were be logged and mapped as they were placed.

Both of these alternatives are already being employed to some extent in other communities. To recover materials in future, however, they will require efficient mining and processing equipment and techniques.

Finally, for those materials which are placed in a landfill, bioreactor, or clean fill, the final land use plan for such areas should continue to strive for the highest, best use of the resulting fill. In Del Norte, for example, the final topography of the Crescent City Landfill after closure will provide approximately 8 acres on top of the landfill with both spectacular views of the surrounding Lake Earl Wildlife Area and potential for future development of wind power resources. Finding new ways to add value to discards is the crux of Zero Waste. If the potential added value is scenic elevation or fill supporting further development, using that value is just one more step towards Zero Waste. The key here is that finding value in disposal is the opportunity of last resort in a Zero Waste Plan, and is explored only after serious and thorough consideration of alternatives which more effectively conserve discarded resources.

Appendices

Appendix A: 1997 Del Norte Discard Study Details
Material Classifications
Del Norte Discard Study 1997 Summary Sheets

Appendix B: Illustrations from Strategic Recycling, by Kay Martin

Appendix C: Glossary

Appendix D: Related Policies and Resolutions

Resolution 99-03: In Support of Citizen, Local and
National Actions to Use Recycled Plastic in Beverage
and Other Food Containers

Board Minutes and Staff Report regarding Policy
Supporting Recovery Businesses

Resolution of the Local Task Force

Appendix E: Group Notes from Border Coast Regional Recyclables Marketing Summit
Reuse & Salvage
Construction, Deconstruction & Demolition
Organics
Scrap Metals
Traditional Recyclables: Containers and Papers

Appendix A: 1997 Del Norte Discard Study Details

Material Classifications

The following definitions were used during the 1997 Del Norte Discard Study. When a material was a composite of more than one material, the item was considered to be made entirely of the material which comprised the greatest weight percent of the item. For example, a glass jar containing food was considered to be all food if the food in the jar was likely heavier than the jar itself.

Table A - 1: Material Definitions for 1997 Del Norte Discard Study

Material Type	Definition	Examples
Cardboard	this category includes all cardboard with the wavy center piece that is uncoated and all paper bags made from the brown kraft paper.	shipping and moving boxes, pieces of cardboard boxes, paper grocery bags, brown fast food bags, shopping bags, heavy-weight pieces of kraft paper. Chip board and plastic bags not included.
Newsprint	this category includes everything that would be included in a delivered newspaper and all items made from newsprint.	newspaper and glossy inserts, free advertising guides, election guides, and tax booklets.
White Ledger	uncolored bond, rag, or stationary grade paper. It may have colored ink on it. When the paper is torn the fibers are white.	copier paper, standard printer paper, and notebook paper.
Other Office Paper	other common types of paper found in an office.	computer form paper, manila folder and envelopes, index cards, white envelopes (w/ or w/o windows), and colored ledger paper.
Magazines & Catalogs	items made of glossy coated paper. The paper is usually slick, smooth to the touch, and reflects light.	glossy magazines, catalogs, brochures, and pamphlets.
Paperboard	a heavy paper product usually used for packaging boxes. This will when torn, the fibers will be either brown or gray.	cereal boxes, toy packages, arts and craft paper.

Material Type	Definition	Examples
Other /composite paper	items made from paper but combined with large amounts of other materials such as wax, plastic, glues, foil, etc.	waxed cardboard, aseptic packages, wax coated milk cartons waxed paper, tissues, paper towels, blueprints, sepi, onion skin, fast food, wrappers, carbon paper, self adhesive notes, photos, books and phone books, and egg cartons.
Clear glass containers	clear glass beverage and food containers with or without a CRV label.	whole or broken clear soda and beer bottles, fruit juice bottles, glass peanut butter jars, and glass mayo jars.
Colored glass containers	another glass beverage and food containers with or without a CRV label container that is not clear.	colored beer bottles, colored wine bottles, and colored glass food jars and bottles.
Flat/ Window glass	clear or tinted glass that is flat.	house window glass, auto glass (not the windshield), safety glass, and architectural glass. This does not include curved or laminated glass.
Other glass	glass that can not be put into any of the other categories. This means articles that are mostly glass but combined with other non-glass materials	Pyrex, Corningware, crystal, table ware, windshields, curved glass, and laminated glass.
Tin/Steel cans	rigid containers made mainly of steel. These items will stick to magnet and may be tin coated and used to store food, beverages, paint, and a variety of other products.	canned food and beverage containers, empty metal paint cans, empty aerosol cans, and bi-metal containers with steel sides and aluminum ends.
Major appliances	major metal appliances, often coated with enamel paint.	refrigerators and freezers, stoves, ovens, water heaters, dryers, and washers.
Ferrous metals	any iron or steel that is magnetic or any stainless steel item. This does not include tin/steel cans.	structural steel, metal clothes hangers, metal pipes, stainless steel cookware, security bars, and scrap ferrous metal.
Aluminum cans	any food or beverage container made mainly of aluminum. Not including bi-metal cans.	beer and soda cans, some pet food cans

Material Type	Definition	Examples
Other non-ferrous metals	any metal item other than aluminum cans that is not stainless steel and that is not magnetic. These items may be made of brass, aluminum, copper, bronze. Lead, zinc, or other metals.	aluminum window and screen door frames, aluminum siding, copper or aluminum wiring, shell casings, brass pipe, non-magnetic silverware, and aluminum foil.
Mixed metal	metal that can not be put into any other metal category. This include items made mainly of metal but combined with other materials. These items can be made of ferrous and/or non-ferrous metal. Small appliances would be in this category	toasters, small appliances and electronics, computers, televisions, radios, and some car parts.
HDPE (#2) plastics	high density polyethylene containers with a #2 inside a recycling triangle on the bottom. These container are usually cloudy white in color allowing light to pass through them, but some are solid colored not allowing light to pass	milk jugs, water jugs, detergent bottles, some hair care bottles, empty and clean oil bottles, empty anti-freeze containers, and most other vehicle fluid containers.
PET (#1) plastics	polyethylene terephthalate containers with the #1 in a recycling triangle on the bottom. This symbol may also be accompanied by the letters "PETE" or "PET". These containers are usually clear or transparent.	soft drink bottles, water bottles, cooking oil containers, and some aspirin bottles
Film Plastics	flexible plastic sheeting often labeled #4. It is made from a variety of plastic resins including HDPE and LDPE. It can easily be contoured around an object by hand	shrink and pallet wrap, plastic garbage bags, food bags, dry cleaning bags, grocery store bags, packaging wrap, and food wrap. This does not include rigid bubble wrap.
Durable Plastic Items	plastic items other than PETE and HDPE containers and film plastics. These items are made to use more than once	outdoor furniture, toys, sporting goods, plastic housewares, vinyl siding, vinyl window frames, plastic buckets, electronic housings, and plastic pipes, appliance that are mostly plastic, and plastic utensils.
Other Plastics	any plastic item that does not fit into any other plastic category. This includes polyvinylchloride (#3) polypropylene (#5), polystyrene (#6), other plastics (#7), and composite materials made mostly of plastic	auto parts made of plastic attached to metal, rigid bubble wrap, straws, foam cups and packaging, packaging peanuts, and cookie and muffin trays.

Material Type	Definition	Examples
Food	materials resulting from the processing, storage, preparation, cooking, handling, and consumption of food. This would include materials from restaurants and home use. This does not include meat or fish scraps.	dairy products, egg shells, fruits, vegetables, bakery wastes, and other food scraps other than meat and fish
Meats & Fish	Any material that can be considered meat or fish scraps.	any meat or bones, processed meats, fish sticks, pizza with meat, gravy, and sauces with meat.
Leaves & Grass	any plant material, except woody materials.	leaves, grass, soft plants, soft stems.
Prunings	all woody plant and tree trimming up to 4 inches in diameter	shrubs, brunches under 4 inches in dia., rose bush trimmings, small Christmas trees, and twigs.
Branches & Stumps	all wood plant and tree materials over 4 inches in diameter	fire wood, logs, trees, and large branches
Textiles	items made from thread, yard, fabric, or cloth	clothes, fabric, drapes, and all natural and synthetic cloth fibers. This does not include cloth or fabric covered items or leather items.
Other & Fines	other organic materials that can not be classified as any other organic material. This does not include ceramics.	leather items, carpets, cork, hemp, rope, garden hoses, rubber items, hair, and carpet padding, and sponges. This will also include the fines leftover after each sort.
Ceramics	pottery and other ceramics made from clay or clay bases.	clay vases, ashtrays, clay paper weights, and some tableware and kitchenware. This does not include porcelain or china.
Untreated Wood	dimensional lumber that has not been treated in any way.	unpainted dimensional lumber, unfinished furniture made of solid wood, wood siding scraps, form stakes, and header scraps.
Treated Wood	wood and lumber that has been treated in any way, painted, stained, or laminated.	painted wood items, plywood, old painted boards, furniture and cabinets with applied finishes, engineered lumber, pressure treated lumber, and lumber with water repellants.

Material Type	Definition	Examples
Concrete	products made from sand, gravel, cement, aggregate, and water.	pieces of foundations, concrete paving, and concrete blocks. These may contain steel reinforcement
Asphalt Paving	Bitumen material mixed with aggregate and used as a paving material.	black road and driveway pieces
Asphalt Roofing	Composite roofing shingles and other roofing materials made with asphalt.	asphalt shingles, roofing tar, and tar paper
Gypsum Board	wall board made of a sheet of gypsum sandwiched between two layers of paper	sheetrock, drywall, gypsum board, plaster board, gypboard, gyprock, and wallboard.
Rocks & Soils	rock pieces of any size and soil, dirt, ceramics, and other matter.	rock, stones, sand, bricks, tiles, porcelain toilets, and soil.
Composite C & D	means construction and demolition materials that do not fit into any other category. This may include items from different categories combined and not easily separated.	brick, insulation, parts of walls, and sections of roofs.
Household Hazardous Wastes	means any liquid cleaners, non-empty aerosols, batteries, pesticides and herbicides, medicines, automotive and equipment fluids, undried paint, over 10 fluorescent light bulbs, and other materials that may contain any hazardous materials.	
Bulky materials	means large hard to handle items that do not belong in another category.	mattresses, box springs, fiberglass showers and tubs, recliners, sofas, and furniture
Sewage Sludge	means residual solid and semi-solids from the treatment of domestic water or sewage, including manures.	
Diapers & Feminine Hygiene	soiled cloth diaper, disposable diapers, and all absorbent fem. hygiene products.	

Material Type	Definition	Examples
Medical Wastes	means all medical products that are not medicines. This includes needles, used bandages and other items that may be contaminated with bodily fluids such as prophylactics and contraceptive products. This does not include fem. hygiene products.	Autoclaved biohazard bags from medical facilities, home sharps containers, used bandages
Tires & Rubber	means automotive, equipment, and bicycle tires with and without rims and other product made of rubber.	tires, inner tubes, neoprene hoses, wet suits, rubber gloves, and rubber bands.

Del Norte Discard Study 1997 Summary Sheets

The following sheets summarize the findings of the 1997 Del Norte Discard Study:

- Figure A - 1: Del Norte County Totals (Including Unincorporated County and City)
- Figure A - 2: Unincorporated Del Norte County Totals
- Figure A - 3: City of Crescent City Totals
- Figure A - 4: Del Norte County Residential (Including Unincorporated and City)
- Figure A - 5: Del Norte County Commercial (Including Unincorporated and City)
- Figure A - 6: Del Norte County Institutional (Including Unincorporated and City)
- Figure A - 7: Pelican Bay State Prison (Included in City and Institutional)
- Figure A - 8: Self-Haul
- Figure A - 9: Hazardous
- Figure A - 10: Total Del Norte Recycling
- Figure A - 11: Total Buy-Back Recycling
- Figure A - 12: Total Drop-off Recycling
- Figure A - 13: Total Recycling Collection
- Figure A - 14: Total Private Recycling

Figure A -1: Del Norte County Totals (Including Unincorporated County and City)

1997 Del Norte Discard Generation Study

Del Norte County				
Del Norte Waste Characterization Study 1997				
Category	Summer: Apr-Sep		Winter: Jan-Mar + Oct-Dec	
	Recycled	Discarded	Recovered	Discarded
Residential	1.5	927.9	1.5	685.9
Residential Collection	1083.9	2158.6	710.1	1554.3
Residential Self-Haul	1086.4	3086.5	711.6	2240.2
Del Norte County Residential				
% Total Residential Discards				
Commercial	65.2	1180.2	65.2	1101.7
Commercial Collection	3597.9	1455.6	2073.3	1118.9
Commercial Self-Haul	3663.1	2615.8	2138.5	2220.6
Del Norte County Commercial				
% Total Commercial Discards				
Institutional	15.0	806.3	439.5	828.7
Institutional Collection	1083.8	954.5	2282.5	1134.8
Institutional Self-Haul	1078.7	1760.8	2682.1	1983.5
Del Norte County Institutional				
% Total Institutional Discards				
TOTAL Del Norte County	81.8	2884.4	506.2	2616.3
Self-Haul	5755.5	4588.7	5035.9	3908.0
Total Del Norte County	5837.3	7463.1	5542.2	6424.4
% Total Discards by weight				
			45%	55%

24% Disposal Tonnage % Collection
76% Disposal Tonnage % Self-Haul

38% Disposal Tonnage % Residential
35% Disposal Tonnage % Commercial
27% Disposal Tonnage % Institutional

Del Norte County TOTAL											
Season Category	Type	Recycled Tons		Burned Tons		Used at Landfill Tons		Disposal Tons		Grand Total Tons	
		Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
PAPER	Cardboard (OCC)	257.8	257.8					280.3	247.5	538.1	505.2
PAPER	Newsprint	131.7	131.7					90.9	112.8	222.6	244.5
PAPER	White ledger	6.5	6.5					66.6	52.5	73.1	59.0
PAPER	Other Office paper	19.7	19.7					30.1	109.8	49.8	129.5
PAPER	Magazines / Catalogs	20.7	20.7					81.1	117.4	101.8	138.1
PAPER	Paperboard							190.0	137.4	190.0	137.4
PAPER	Other / Composite paper							614.2	715.1	614.2	715.1
GLASS	Clear containers	35.9	35.9					210.8	144.5	246.7	180.4
GLASS	Colored containers	138.7	138.7					102.6	65.7	241.3	204.5
GLASS	Flat / Window glass							14.6	0.7	14.6	0.7
GLASS	Other glass							4.2	2.0	4.2	2.0
METALS	Steel cans	13.6	13.6					118.1	111.3	131.6	124.8
METALS	Major Appliances	48.2	51.8					142.4	91.5	190.7	143.3
METALS	Ferrous metals	12.1	362.1					41.7	62.2	53.8	424.4
METALS	Aluminum cans	54.7	54.7					32.2	31.5	86.9	86.2
METALS	Other non-ferrous	0.1	0.1					60.1	24.8	60.3	25.0
METALS	Mixed metal/metal & small appliances							178.6	335.9	178.6	335.9
PLASTICS	HDPE Clear (#2)	7.1	7.1					71.0	69.2	78.2	76.3
PLASTICS	PET Plastic (#1)	10.9	10.9					48.0	35.1	58.9	46.1
PLASTICS	Film Plastics (#4 & other)							219.7	220.6	219.7	220.6
PLASTICS	Durable plastic items	0.1	0.1					72.7	144.8	72.7	144.8
PLASTICS	Other plastics							283.6	244.1	283.6	244.1
ORGANIC	Food Waste	1440.0	1440.0					1387.2	1097.9	1387.2	1097.9
ORGANIC	Fish & Meat Waste							70.2	45.2	1510.2	1485.2
ORGANIC	Leaves & Grass							136.9	35.1	136.9	35.1
ORGANIC	Prunings			96.8	136.9			26.0	3.2	122.8	140.1
ORGANIC	Branches & stumps			1000.0	500.0			135.3	4.1	1135.3	504.1
ORGANIC	Textiles	0.0	1.5					233.2	199.8	233.2	201.3
ORGANIC	Other and Fines							204.5	369.2	204.5	369.2
ORGANIC	Ceramics							23.1		23.1	
CONSTRUCTION	Untreated Wood							41.6	67.8	41.6	67.8
CONSTRUCTION	Treated Wood							241.7	163.7	241.7	163.7
CONSTRUCTION	Concrete					416.0	181.7	169.3	148.7	585.2	330.4
CONSTRUCTION	Asphalt paving					425.6	103.7	36.0	22.1	461.6	125.7
CONSTRUCTION	Asphalt roofing							332.9	182.6	332.9	182.6
CONSTRUCTION	Gypsum Board							70.8	34.7	70.8	34.7
CONSTRUCTION	Rock & Soils							26.7	12.9	1513.6	2051.1
CONSTRUCTION	Composite C&D							116.8	34.5	116.8	34.5
HAZARDOUS	Household Hazardous Waste							76.1	46.3	289.3	63.4
SPECIAL	Bulky wastes							507.5	237.5	508.1	238.0
SPECIAL	Sewage Sludge							130.7	215.3	130.7	215.3
SPECIAL	Disposable Diapers / Fem. Hygiene							20.4	33.6	20.4	33.6
SPECIAL	Treated Medical waste							13.5	21.9	13.5	21.9
SPECIAL	Tires & Rubber							7478.2	6438.6	13315.5	11980.3
TOTALS		2412.0	2570.6	1096.8	636.9	2328.4	2334.7	7478.2	6438.6	13315.5	11980.3

% Disposal

3.79%
1.48%
0.88%
1.01%
1.43%
2.35%
9.55%
2.55%
1.21%
0.11%
0.04%
1.85%
1.88%
0.75%
0.46%
0.61%
3.70%
1.01%
0.69%
1.56%
3.16%
3.78%
17.86%
0.88%
1.24%
0.21%
1.00%
3.11%
4.12%
0.17%
0.79%
2.91%
2.28%
0.42%
3.70%
0.78%
0.28%
1.06%
0.88%
5.38%
6.54%
2.49%
0.39%
0.25%

Figure A - 2: Unincorporated Del Norte County Totals

Unincorporated										
Del Norte Waste Characterization Study 1997										
Season	Category	Type	Summer: Apr-Sep		Winter: Jan-Mar + Oct-Dec		TOTAL TONS		1997	
			Recovered	Discarded	Recovered	Discarded	Recovered	Discarded	% Discarded	% Discarded
Residential	Residential Collection		907.4	883.2	610.5	588.9	1517.5	1472.2	4948.4	25%
	Residential Self Haul		907.4	2402.2	610.5	1810.5	1517.9	4302.7	5820.5	75%
	Unincorporated Residential									98%
	% Unincorporated Residential Discards									27%
	Commercial Collection		1680.7	752.6	461.0	583.4	2121.7	1533.7	3641.4	73%
Commercial	Commercial Self Haul		1680.4	345.6	488.7	1283.4	2179.1	2861.7	5040.8	33%
	Unincorporated Commercial									
	% Unincorporated Commercial Discards									57%
	Institutional Collection		806.8	33.5	2139.4	24.3	2946.2	57.8	3897.8	91%
	Institutional Self Haul		806.8	425.7	2469.4	525.9	3296.2	1009.4	4303.6	29%
Institutional	Unincorporated Institutional									
	% Unincorporated Institutional Discards									23%
	Collection Self-haul		28.7	1889.3	378.7	1192.6	407.4	2852.0	3259.3	21%
	Total Unincorporated Del Norte		3403.6	2870.3	3210.9	5321.5	6993.3	6173.7	15167.0	79%
	% Unincorporated Discards by weight									100%
TOTAL Unincorporated										
Total Unincorporated Del Norte										
% Unincorporated Discards by weight										
TOTAL Unincorporated										
Unincorporated TOTAL										
Season	Category	Type	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
PAPER	Cardboard (OCC)		89.4	89.4			172.0	139.2	261.4	228.6
PAPER	Newsprint		113.5	113.5			66.4	74.3	179.8	187.8
PAPER	White ledger		5.4	5.4			34.4	31.7	39.9	37.1
PAPER	Other Office paper		16.8	16.8			25.4	27.5	42.2	94.3
PAPER	Magazines / Catalogs		17.7	17.7			63.7	86.9	81.4	104.7
PAPER	Paperboard						133.9	88.8	135.9	88.8
PAPER	Other / Composite paper						367.4	379.8	367.4	379.8
GLASS	Clear containers		30.7	30.7			163.1	107.4	193.8	138.1
GLASS	Colored containers		119.2	119.2			71.3	51.4	196.5	170.5
GLASS	Flat / Window glass						11.6	0.5	11.6	0.3
GLASS	Other glass						2.6	1.3	2.6	1.3
METALS	Steel cans		10.3	10.3			91.2	88.1	101.7	98.6
METALS	Major Appliances		38.9	45.5			73.1	41.8	121.1	37.2
METALS	Ferrous metals		5.2	355.2			34.6	44.8	39.8	400.0
METALS	Aluminum cans		46.6	46.6			23.2	21.4	69.8	67.9
METALS	Other non-ferrous		0.1	0.1			48.0	17.9	48.1	18.0
METALS	Mixed metal/metal & small appliances						142.8	251.8	142.8	251.8
PLASTICS	HDPE Clear (#2)		6.0	6.0			51.4	52.4	51.4	52.4
PLASTICS	PET Plastic (#1)		9.5	9.5			22.0	24.8	31.5	34.3
PLASTICS	Film Plastics (#4 & other)						126.5	114.6	126.5	114.6
PLASTICS	Durable plastic items						56.8	82.2	56.8	82.2
PLASTICS	Other plastics						209.5	162.5	209.5	162.5
ORGANIC	Food Waste						825.1	577.5	825.1	577.5
ORGANIC	Fish & Meat Waste						49.3	28.7	49.3	28.7
ORGANIC	Leaves & Grass						95.5	95.5	95.5	95.5
ORGANIC	Prunings						11.4	16	95.6	136.6
ORGANIC	Branches & stumps						107.5	2.9	861.2	379.7
ORGANIC	Textiles						129.3	101.5	129.3	101.5
ORGANIC	Other and Fines						126.9	235.8	126.9	235.8
ORGANIC	Ceramics						18.7	0.1	18.7	0.1
ORGANIC	Unreated Wood						25.5	49.7	25.5	49.7
CONSTRUCTION	Treated Wood						189.8	90.6	189.8	90.6
CONSTRUCTION	Concrete						81.0	33.2	467.8	115.5
CONSTRUCTION	Asphalt paving						22.6	12.9	448.2	116.6
CONSTRUCTION	Asphalt roofing						163.2	66.4	163.2	66.4
CONSTRUCTION	Gypsum Board						61.1	18.2	61.1	18.2
CONSTRUCTION	Rock & Soils						15.2	4.3	1089.4	204.3
CONSTRUCTION	Composite C&D						78.1	13.4	78.1	13.4
HAZARDOUS	Household Hazardous Waste						63.4	34.8	231.1	48.3
SPECIAL	Bulky wastes						376.8	197.3	376.8	197.3
SPECIAL	Sewage Sludge						3.7	3.7	3.7	3.7
SPECIAL	Disposable Diapers / Fem. Hygiene						107.3	181.5	107.3	181.5
SPECIAL	Treated Medical waste						5.4	5.1	5.4	5.1
SPECIAL	Tires & Rubber						11.1	16.4	11.1	27.3
TOTALS			679.2	881.0	837.9	511.8	1886.6	2196.8	4564.7	7228.0

1997 Del Norte Discard Generation Study

Printed on minimum 20% post-consumer recycled paper

Figure A - 4: Del Norte County Residential (Including Unincorporated and City)

1997 Del Norte Discard Generation Study

Del Norte County Residential													
Category	Type	Recycled Tons		Burned Tons		Used at Landfill Tons		Disposal Tons		Grand Total Tons		Composition %	Summar %
		Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter		
PAPER	Cardboard (OCC)	64.7	64.7					93.7	86.2	158.4	151.0	4.3%	51%
PAPER	Newspaper	120.6	120.6					44.7	44.8	165.2	165.4	4.6%	50%
PAPER	White ledger	5.8						9.8	14.1	15.6	20.0	0.5%	48%
PAPER	Other Office paper	17.9	17.9					2.0	38.5	19.9	56.4	1.1%	26%
PAPER	Magazines / Catalogs	18.9	18.9					38.4	62.9	57.3	81.8	2.0%	41%
PAPER	Paperboard							90.6	53.3	90.6	53.3	2.7%	63%
PAPER	Other / Composite paper							267.3	204.2	267.3	204.2	6.6%	57%
GLASS	Clear containers	32.7	32.7					127.3	54.1	160.0	86.8	3.3%	63%
GLASS	Colored containers	127.3	127.3					49.8	24.9	177.1	152.2	4.6%	54%
GLASS	Flat / Window glass							11.6	0.4	11.6	0.4	0.2%	96%
GLASS	Other glass							0.4	1.3	0.4	1.3	0.0%	22%
METALS	Steel cans	11.4	11.4					68.0	54.0	79.4	65.4	2.0%	53%
METALS	Major Appliances	32.6	32.6					7.4	7.4	32.6	32.8	0.9%	89%
METALS	Ferrous metals	5.5	5.5					26.4	31.7	32.0	37.2	1.0%	50%
METALS	Aluminum cans	50.0	50.0					17.9	13.5	67.9	63.4	1.8%	46%
METALS	Other non-ferrous	0.1	0.1					41.5	12.9	41.6	12.9	0.8%	52%
METALS	Mixed metal/metal & small appliances							116.2	192.9	116.2	192.9	4.3%	76%
PLASTICS	HDPE Clear (#2)	6.4	6.4					45.6	39.1	52.0	45.5	1.4%	38%
PLASTICS	PET Plastic (#1)	10.1	10.1					15.7	17.0	25.8	27.0	0.7%	53%
PLASTICS	Film Plastics (#4 & other)							78.8	69.8	78.8	69.8	2.1%	49%
PLASTICS	Durable plastic items							41.6	56.9	41.6	56.9	1.4%	53%
PLASTICS	Other plastics							160.7	106.2	160.7	106.2	3.7%	60%
ORGANIC	Food waste							562.8	347.6	562.8	347.6	12.8%	62%
ORGANIC	Fish & Meat Waste							36.1	12.1	36.1	12.1	0.7%	75%
ORGANIC	Leaves & Grass							81.6	19.6	81.6	19.6	1.4%	81%
ORGANIC	Prunings							3.2	1.2	76.1	2.8	1.1%	98%
ORGANIC	Branches & stumps							106.8	89.0	326.2	112.4	6.1%	74%
ORGANIC	Textiles							84.5	89.0	84.5	89.0	2.4%	49%
ORGANIC	Other and Fines							89.4	173.6	89.4	173.6	3.7%	34%
ORGANIC	Ceramics							17.0		17.0		0.2%	100%
CONSTRUCTION	Untreated Wood							9.0	33.1	9.0	33.1	0.6%	21%
CONSTRUCTION	Treated Wood							90.2	59.8	90.2	59.8	2.1%	60%
CONSTRUCTION	Concrete							52.3	41.1	52.3	41.1	1.3%	56%
CONSTRUCTION	Asphalt paving							0.6	1.1	0.6	1.1	0.0%	37%
CONSTRUCTION	Asphalt roofing							6.7	0.9	6.7	0.9	0.1%	89%
CONSTRUCTION	Gypsum Board							43.3	12.7	43.3	12.7	0.8%	77%
CONSTRUCTION	Rock & Soils							4.5		38.0	44.6	1.2%	46%
CONSTRUCTION	Composite C&D							51.6	4.1	51.6	4.1	0.8%	93%
HAZARDOUS	Household Hazardous Waste							42.4	27.4	256.0	44.5	4.2%	83%
SPECIAL	Bulky wastes							403.1	144.9	403.1	144.9	7.2%	74%
SPECIAL	Sewage Sludge							1.6		1.6		0.0%	100%
SPECIAL	Disposable Diapers / Fem. Hygiene							91.3	120.9	91.3	120.9	3.0%	43%
SPECIAL	Treated Medical waste							2.4	3.6	2.4	3.6	0.1%	40%
SPECIAL	Tires & Rubber							10.3	0.8	10.3	0.8	0.2%	93%
TOTALS		717.5	513.8	292.3	111.4	85.7	86.5	3086.5	2240.2	4182.0	2951.9	100.0%	59%

Figure A - 5: Del Norte County Commercial (Including Unincorporated and City)

1997 Del Norte Discard Generation Study

Del Norte County Commercial												
Season	Category	Type	Recycled		Burned		Used at Landfill		Disposal		Grand Total	
			Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
PAPER	Cardboard (OCC)		186.5	186.5					109.6	79.0	296.1	265.5
PAPER	Newsprint		11.0	11.0					38.1	40.1	49.1	51.1
PAPER	White ledger		0.6	0.6					27.8	15.5	28.3	16.1
PAPER	Other office paper		1.7	1.7					11.0	20.6	12.8	22.3
PAPER	Magazines / Catalogs		1.8	1.8					33.9	36.7	35.7	38.5
PAPER	Paperboard								62.0	44.4	62.0	44.4
PAPER	Other / Composite paper								148.7	259.1	148.7	259.1
GLASS	Clear containers		3.2	3.2					34.5	41.7	37.7	44.9
GLASS	Colored containers		11.4	11.4					39.2	14.8	30.6	26.2
GLASS	Flat / Window glass								1.9	0.1	1.9	0.1
GLASS	Other glass								3.4	0.7	3.4	0.7
METALS	Steel cans		0.9	0.9					37.8	34.5	38.7	35.4
METALS	Major Appliances		9.0	11.9					142.4	82.9	151.5	94.9
METALS	Ferrous metals		0.5	0.5					12.9	27.1	13.5	27.7
METALS	Aluminum cans		4.7	4.7					8.0	7.1	12.8	11.9
METALS	Other non-ferrous		0.0	0.0					15.2	8.7	15.2	8.7
METALS	Mixed metal/metal & small appliances								42.9	103.8	42.9	103.8
PLASTICS	HDPE Clear (#2)		0.5	0.5					18.3	18.2	18.9	18.8
PLASTICS	PET Plastic (#1)		0.9	0.9					10.1	7.8	11.0	8.7
PLASTICS	Film Plastics (#4 & other)								77.4	68.1	72.4	68.1
PLASTICS	Durable plastic items								20.7	44.4	20.7	44.4
PLASTICS	Other plastics								86.1	85.3	86.1	85.3
ORGANIC	Food Waste		1440.0	1440.0					431.3	289.4	431.3	289.4
ORGANIC	Fish & Meat Waste								14.2	16.6	14.2	16.6
ORGANIC	Leaves & Grass								44.6	6.0	44.6	6.0
ORGANIC	Prunings				9.5	2.7			22.8	2.1	32.3	4.3
ORGANIC	Branches & stumps				600.6	300.3			17.5	1.3	618.0	301.6
ORGANIC	Textiles			1.5					65.5	39.8	65.5	41.3
ORGANIC	Other and Flies								73.9	134.1	73.9	134.1
ORGANIC	Ceramics								5.2	5.2	5.2	5.2
CONSTRUCTION	Untreated Wood								31.4	30.0	31.4	30.0
CONSTRUCTION	Treated Wood								140.5	89.2	140.5	89.2
CONSTRUCTION	Concrete						329.2	55.1	169.3	148.7	498.4	203.7
CONSTRUCTION	Asphalt paving						206.0	62.3	35.4	21.0	331.4	83.3
CONSTRUCTION	Asphalt roofing								325.9	181.7	325.9	181.7
CONSTRUCTION	Gypsum Board								23.6	20.5	23.6	20.5
CONSTRUCTION	Rock & Soils						755.0	41.0	22.2	12.9	777.2	53.9
CONSTRUCTION	Composite C&D								58.4	28.4	58.4	28.4
CONSTRUCTION	Household Hazardous Waste								28.0	11.1	28.0	11.1
SPECIAL	Bulky wastes								62.2	60.5	62.2	60.5
SPECIAL	Sewage Sludge								2.3	2.3	2.3	2.3
SPECIAL	Disposable Diapers / Fem. Hygiene								29.3	69.9	29.3	69.9
SPECIAL	Treated Medical waste								8.9	6.6	8.9	6.6
SPECIAL	Tires & Rubber								1.5	10.4	1.5	10.4
TOTALS			1672.9	1677.3	610.1	302.5	1380.2	158.6	2615.3	2220.6	6278.9	4359.1
											100.0%	59%

Figure A - 6: Del Norte County Institutional (Including Unincorporated and City)

1997 Del Norte Discard Generation Study

Del Norte County Institutional									
Season	Type	Recycled Tons		Burned Tons		Used at Landfill Tons		Disposal Tons	
		Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Cardboard (OCC)		6.6	6.6					8.2	88.8
PAPER								8.2	88.8
Newsprint		0.1	0.1					8.3	28.0
White ledger		0.1	0.1					29.0	22.8
PAPER								17.0	50.7
Other Office paper		0.1	0.1					8.8	17.8
PAPER								37.4	39.6
Magazines / Catalogs								198.3	251.7
PAPER								28.0	48.7
Other / Composite paper								13.6	26.0
PAPER								0.4	0.1
Clear containers								12.2	22.8
GLASS								6.6	13.6
Colored containers								2.3	3.4
GLASS								6.2	10.9
Flint / Window glass								3.4	3.2
GLASS								19.5	39.2
Other glass								7.2	11.9
Steel cans		1.2	1.2					22.2	10.3
METALS								10.4	43.5
Major Appliances		6.6	14.5					63.5	82.8
METALS								36.7	52.6
Ferrous metals		6.1	356.1					39.0	461.0
METALS								19.9	16.4
Aluminum cans		0.1	0.1					10.7	9.6
METALS								11.0	0.1
Other non-ferrous		0.1	0.1					83.2	71.0
METALS								41.2	61.5
Mixed metal/metal & small appliances		0.1	0.1					0.9	0.9
PLASTICS								1.1	4.8
PET Plastic (#1)								11.1	14.7
PLASTICS								34.5	85.5
Fluoroplastics (H4 & other)								129.5	41.4
PLASTICS								698.5	1952.6
Durable plastic items		0.1	0.1					6.7	2.0
PLASTICS								5.7	7.9
Other plastics								42.3	32.1
PLASTICS								50.3	386.3
Food waste								10.1	24.6
ORGANIC								9.1	23.5
Fish & Meat Waste								1.7	11.5
ORGANIC								175.9	1977.7
Leaves & Grass								862.6	2089.6
ORGANIC								194.4	223.0
Prunings								379.5	21.7
ORGANIC								14.4	133.0
Branches & stumps								180.0	90.0
ORGANIC								0.0	0.0
Textiles		0.0	0.0						
ORGANIC									
Other and Fines									
ORGANIC									
Ceramics									
ORGANIC									
Unreated Wood									
CONSTRUCTION									
Treated Wood									
CONSTRUCTION									
Concrete									
CONSTRUCTION									
Asphalt paving									
CONSTRUCTION									
Rock & Soils									
CONSTRUCTION									
Gypsum Board									
CONSTRUCTION									
Composite C&D									
CONSTRUCTION									
Household Hazardous Waste									
HAZARDOUS									
Bulky wastes		0.5	0.5						
SPECIAL									
Sewage Sludge									
SPECIAL									
Disposable Diapers / Fem. Hygiene									
SPECIAL									
Treated Medical waste									
SPECIAL									
Tires & Rubber									
SPECIAL									
TOTALS									

Figure A - 7: Pelican Bay State Prison (Included in City and Institutional)

1997 Del Norte Discard Generation Study

Pelican Bay State Prison (Institutional, Crescent City)																			
Season	Category	DND collections only		Recycled		Burned		Structure		Disposal PBSP City Inst. Coll.		Grand Total		Composition %	Recovered %	Summer %			
		Type		Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter						
PAPER	Cardboard (OCC)			6.6	6.6							56.7	46.5	63.3	53.0	7.2%	11%	54%	
	Newsprint			0.1	0.1								12.0	0.1	12.1	0.8%	2%	1%	
	White ledger			0.1	0.1							19.5	3.6	19.7	3.7	1.5%	1%	84%	
	Other Office paper			0.1	0.1							0.4	12.2	0.5	12.3	0.8%	1%	4%	
	Magazines / Catalogs											3.4	4.7	3.4	4.7	0.5%		42%	
	Paperboard											20.6	11.7	20.6	11.7	2.0%		64%	
	PAPER	Other / Composite paper										140.8	146.0	140.8	146.0	17.8%		49%	
	GLASS	Clear containers																	
	GLASS	Colored containers																	
	GLASS	Flat / Window glass																	
METALS	Other glass																		
	Steel cans			1.2	1.2									1.2	1.2	0.2%	100%	50%	
	Major Appliances																		
	Ferrous metals			6.1	6.1									6.1	6.1	0.8%	100%	50%	
	Aluminum cans			0.1	0.1							2.4	5.4	2.4	5.4	0.5%	1%	31%	
	Other non-ferrous			0.1	0.1									0.1	0.1	0.0%	100%	50%	
	METALS	Mixed metal/metal & small appliances																	
	PLASTICS	HDPE Clear (#2)			0.1	0.1							2.2	2.0	2.3	2.1	0.3%	6%	52%
	PLASTICS	PET Plastic (#1)											19.1	4.0	19.1	4.0	1.4%		83%
	PLASTICS	Film Plastics (#4 & other)											47.4	54.1	47.4	54.1	6.3%		47%
PLASTICS	Durable plastic items			0.1	0.1							6.3	33.1	6.4	33.1	2.5%	0%	16%	
	Other plastics											20.3	28.0	20.3	28.0	3.0%		42%	
	Food Waste											302.6	309.6	302.6	309.6	38.1%		49%	
	ORGANIC	Fish & Meat Waste										6.6	4.5	6.6	4.5	0.7%		59%	
	ORGANIC	Leaves & Grass											0.8			0.8	0.0%		
	ORGANIC	Prunings																	
	ORGANIC	Branches & stumps																	
	ORGANIC	Textiles			0.0	0.0							72.5	57.7	72.5	57.7	8.1%	0%	56%
	ORGANIC	Other and Fines											27.0	29.9	27.0	29.9	3.5%		47%
	ORGANIC	Ceramics																	
CONSTRUCTION	Untreated Wood																		
	CONSTRUCTION	Treated Wood											3.2			3.2	0.2%		
	CONSTRUCTION	Concrete									74.5					74.5	4.6%	100%	
	CONSTRUCTION	Asphalt paving																	
	CONSTRUCTION	Asphalt roofing																	
	CONSTRUCTION	Gypsum Board																	
	CONSTRUCTION	Rock & Soils																	
	CONSTRUCTION	Composite C&D																	
	HAZARDOUS	Household Hazardous Waste																	
	SPECIAL	Bulky wastes			0.5	0.5										0.5	0.5	0.1%	100%
Sewage Sludge												16.1	12.6	16.1	12.6	1.8%		56%	
Disposable Diapers / Fem. Hygiene																			
Treated Medical waste												8.8	23.1	8.8	23.1	2.0%		28%	
Tires & Rubber																			
TOTALS				15.0	15.0							772.8	804.4	787.8	819.4	100.0%	2%	49%	

Figure A - 8: Self-Haul

1997 Del Norte Discard Generation Study

Self-Haul

Del Norte Waste Characterization Study, 1997

Survey Dates:	Summer: Apr-Sep		Winter: Jan-Mar + Oct-Dec	
	14 Aug 97 >> 20 Aug 97	05 Feb 98 & 04 Mar >> 01 Apr 98	05 Feb 98 & 04 Mar >> 01 Apr 98	1997
Average Vehicles / day	72	370	62	330
Commercial	9	1066	15	800
Residential (includes Pelican Bay State Prison)	2	770	1	340
Self-haul Totals	83	2148	78	2070
What % is Self-Haul at the Landfill	88%	30%	88%	25%

What % is Self-Haul at this Landfill													
88% 30% 29%													
Self-Haul Totals													
88%													
89%													
90%													
91%													
92%													
93%													
94%													
95%													
96%													
97%													
98%													
99%													
100%													
101%													
102%													
103%													
104%													
105%													
106%													
107%													
108%													
109%													
110%													
111%													
112%													
113%													
114%													
115%													
116%													
117%													
118%													
119%													
120%													
121%													
122%													
123%													
124%													
125%													
126%													
127%													
128%													
129%													
130%													
131%													
132%													
133%													
134%													
135%													
136%													
137%													
138%													
139%													
140%													
141%													
142%													
143%													
144%													
145%													
146%													
147%													
148%													
149%													
150%													
151%													
152%													
153%													
154%													
155%													
156%													
157%													
158%													
159%													
160%													
161%													
162%													
163%													
164%													
165%													
166%													
167%													
168%													
169%													
170%													
171%													
172%													
173%													
174%													
175%													
176%													
177%													
178%													
179%													
180%													
181%													
182%													
183%													
184%													
185%													
186%													
187%													
188%													
189%													
190%													
191%													
192%													
193%													
194%													
195%													
196%													
197%													
198%													
199%													
200%													
201%													
202%													
203%													
204%													
205%													
206%													
207%													
208%													
209%													
210%													
211%													
212%													
213%													
214%													
215%													
216%													
217%													
218%													
219%													
220%													
221%													
222%													
223%													
224%													
225%													
226%													
227%													
228%													
229%													
230%													
231%													
232%													
233%													
234%													
235%													
236%													
237%													
238%													
239%													
240%													
241%													
242%													
243%													
244%													
245%													
246%													
247%													
248%													
249%													
250%													
251%													
252%													
253%													
254%													
255%													
256%													
257%													
258%													
259%													
260%													
261%													
262%													
263%													
264%													
265%													
266%													
267%													
268%													
269%													
270%													
271%													
272%													
273%													
274%													
275%													
276%													
277%													
278%													
279%													
280%													
281%													
282%													
283%													
284%													
285%													
286%													
287%													
288%													
289%													
290%													
291%													
292%													
293%													
294%													
295%													
296%													
297%													
298%													
299%													
300%													
301%													
302%													
303%													
304%													
305%													
306%													
307%													
308%													
309%													
310%													
311%													
312%													
313%													
314%													
315%													
316%													
317%													
318%													
319%													
320%													
321%													
322%													
323%													
324%													
325%													
326%													
327%													
328%													
329%													
330%													
331%													
332%													
333%													
334%													
335%													
336%													
337%													
338%													
339%													
340%													
341%													
342%													
343%													
344%													
345%													
346%													
347%													
348%													
349%													
350%													
351%													
352%													
353%													
354%													
355%													
356%													
357%													
358%													
359%													
360%													
361%													
362%													
363%													
364%													
365%													
366%													
367%													
368%													
369%													
370%													
371%													
372%													
373%													
374%													
375%													
376%													
377%													
378%													
379%													
380%													
381%													
382%													
383%													
384%													
385%													
386%													
387%													
388%													
389%													
390%													
391%													
392%													
393%													
394%													
395%													
396%													
397%													
398%													
399%													
400%													
401%													
402%													
403%													
404%													
405%													
406%													
407%													
408%													
409%													
410%													
411%													
412%													
413%													
414%													
415%													
416%													
417%													
418%													
419%													
420%													
421%													
422%													
423%													
424%													
425%													
426%													
427%													
428%													
429%													
430%													
431%													
432%													
433%													
434%													
435%													
436%													
437%													
438%													
439%													
440%													
441%													
442%													
443%													
444%													
445%													
446%													
447%													
448%													
449%													
450%													
451%													
452%													
453%													
454%													
455%													
456%													
457%													
458%													
459%													
460%													
461%													
462%													
463%													
464%													
465%													
466%													
467%													
468%													
469%													
470%													
471%													
472%													
473%													
474%													
475%													
476%													
477%													
478%													
479%													
480%													
481%													
482%													
483%													
484%													
485%													
486%													
487%													
488%													
489%													
490%													
491%													
492%													
493%													
494%													
495%													
496%													
497%													
498%													
499%													
500%													
501%													
502%													
503%													
504%													
505%													
506%													
507%													
508%													
509%													
510%													
511%													
512%													
513%													
514%													
515%													
516%													
517%													
518%													
519%													
520%													
521%													
522%													
523%													
524%													
525%													
526%													
527%													
528%													
529%													
530%													
531%													
532%													
533%													
534%													
535%													
536%													
537%													
538%													
539%													
540%													
541%													
542%													
543%													
544%													
545%													
546%													
547%													
548%													
549%													
550%													
551%													
552%													
553%													
554%													
555%													
556%													
557%													
558%													
559%													
560%													
561%													
562%													
563%													
564%													
565%													
566%													
567%													
568%													
569%													
570%													
571%													
572%													
573%													
574%													
575%													
576%													
577%													
578%													
579%													
580%													
581%													
582%													
583%													
584%													
585%													
586%													
587%													
588%													
589%													
590%													
591%													
592%													
593%													
594%													
595%													
596%													
597%													
598%													
599%													
600%													
601%													
602%													
603%													
604%													
605%													
606%													
607%													
608%													
609%													
610%													
611%													
612%													
613%													
614%													
615%													
616%													
617%													
618%													
619%													
620%													
621%													
622%													
623%													
624%													
625%													
626%													
627%													
628%													
629%													
630%													
631%													
632%													
633%													
634%													
635%													
636%													
637%													
638%													
639%													
640%													
641%													
642%													
643%													
644%													
645%													
646%													
647%													
648%													
649%													
650%													
651%													
652%													
653%													
654%													
655%													
656%													
657%													
658%													
659%													
660%													
661%													
662%													
663%													
664%													
665%													
666%													
667%													
668%													
669%													
670%													
671%													
672%													
673%													
674%													
675%													
676%													
677%													
678%													
679%													
680%													
681%													
682%													
683%													
684%													
685%													
686%													
687%													
688%													
689%													
690%													
691%													
692%													
693%													
694%													
695%													
696%													
697%													
698%													
699%													
700%													
701%													
702%													
703%													
704%													
705%													
706%													
707%													
708%													
709%													
710%													
711%													
712%													
713%													
714%													
715%													
716%													
717%													
718%													
719%													
720%													
721%													
722%													
723%													
724%													
725%													
726%													
727%													
728%													
729%													
730%													
731%													
732%													
733%													
734%													
735%													
736%													
737%													
738%													
739%													
740%													
741%													
742%													
743%													
744%													
745%													
746%													
747%													
748%													
749%													
750%													
751%													
752%													
753%													
754%													
755%													
756%													
757%													
758%													
759%													
760%													
761%													
762%													
763%													
764%													
765%													
766%													
767%													
768%													
769%													
770%													
771%													
772%													
773%													
774%													
775%													
776%													
777%													
778%													
779%													
780%													
781%													
782%													
783%													
784%													
785%													
786%													
787%													
788%													
789%													
790%													
791%													
792%													
793%													
794%													
795%													
796%													
797%													
798%													
799%													
800%													
801%													
802%													
803%													
804%													
805%													
806%													
807%													
808%													
809%													
810%													
811%													
812%													
813%													
814%													
815%													
816%													
817%													
818%													
819%													
820%													
821%													
822%													
823%													
824%													
825%													
826%													
827%													
828%													
829%													
830%													
831%													
832%													
833%													
834%													
835%													
836%													
837%													
838%													
839%													
840%													
841%													
842%													
843%													
844%													
845%													
846%													
847%													
848%													
849%													
850%													
851%													
852%													
853%													
854%													
855%													
856%													
857%													
85													

Figure A - 9: Hazardous

1997 Del Norte Discard Generation Study

Hazardous		Summer: Apr-Sep		Winter: Jan-Mar + Oct-Dec		TOTAL 1997	
Del Norte Waste Characterization Study 1997		Recovered	Disposed	Recovered	Disposed	Recovered	Disposed
Landfill	Crescent City	0.0	0.0	0.0	0.0	0.0	0.0
	Unincorporated	0.0	0.0	0.0	0.0	0.0	0.0
	Total Dropoff at landfill	4.2	0.1	4.3	0.1	8.5	0.3
Collection Event	Residential	0.0	0.0	0.0	0.0	0.0	0.0
	Commercial	0.0	0.0	0.0	0.0	0.0	0.0
	Total collection event	8.5	7.5	0.0	0.0	8.5	7.5
TOTAL DEL NORTE		4.2	0.1	4.3	0.1	8.5	0.3
Landfill dropoff		8.5	7.5	0.0	0.0	8.5	7.5
Collection event		12.7	7.6	4.3	0.1	17.0	7.6

% of Del Norte Total

TOTAL DEL NORTE RESIDENTIAL		Recycled		Burned		Dried at Landfill		Disposal		Grand Total Hazardous		Composition	Recovered	Summer
Season	Type	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	%	%	%
PAPER	Cardboard (OCC)							0.0	0.0	0.0	0.0	0.0%	0%	0%
PAPER	Newsprint							0.0	0.0	0.0	0.0	0.0%	0%	0%
PAPER	White ledger							0.0	0.0	0.0	0.0	0.0%	0%	0%
PAPER	Other Office paper							0.0	0.0	0.0	0.0	0.0%	0%	0%
PAPER	Magazines / Catalogs							0.0	0.0	0.0	0.0	0.0%	0%	0%
PAPER	Paperboard							0.0	0.0	0.0	0.0	0.0%	0%	0%
PAPER	Other / Composite paper							0.0	0.0	0.0	0.0	0.0%	0%	0%
GLASS	Clear containers							0.0	0.0	0.0	0.0	0.0%	0%	0%
GLASS	Colored containers							0.0	0.0	0.0	0.0	0.0%	0%	0%
GLASS	Flat / Window glass							0.0	0.0	0.0	0.0	0.0%	0%	0%
GLASS	Other glass							0.0	0.0	0.0	0.0	0.0%	0%	0%
METALS	Steel cans							0.0	0.0	0.0	0.0	0.0%	0%	0%
METALS	Major Appliances							0.0	0.0	0.0	0.0	0.0%	0%	0%
METALS	Ferrous metals							0.0	0.0	0.0	0.0	0.0%	0%	0%
METALS	Aluminum cans							0.0	0.0	0.0	0.0	0.0%	0%	0%
METALS	Other non-ferrous							0.0	0.0	0.0	0.0	0.0%	0%	0%
METALS	Mixed metal/metal & small ap							0.0	0.0	0.0	0.0	0.0%	0%	0%
PLASTICS	HDPE Clear (#2)							0.0	0.0	0.0	0.0	0.0%	0%	0%
PLASTICS	PET Plastic (#1)							0.0	0.0	0.0	0.0	0.0%	0%	0%
PLASTICS	Film Plastics (#4 & other)							0.0	0.0	0.0	0.0	0.0%	0%	0%
PLASTICS	Durable plastic items							0.0	0.0	0.0	0.0	0.0%	0%	0%
PLASTICS	Other plastics							0.0	0.0	0.0	0.0	0.0%	0%	0%
ORGANIC	Food Waste							0.0	0.0	0.0	0.0	0.0%	0%	0%
ORGANIC	Fish & Meat Waste							0.0	0.0	0.0	0.0	0.0%	0%	0%
ORGANIC	Leaves & Grass							0.0	0.0	0.0	0.0	0.0%	0%	0%
ORGANIC	Prunings							0.0	0.0	0.0	0.0	0.0%	0%	0%
ORGANIC	Branches & stumps							0.0	0.0	0.0	0.0	0.0%	0%	0%
ORGANIC	Textiles							0.0	0.0	0.0	0.0	0.0%	0%	0%
ORGANIC	Other and Fines							0.0	0.0	0.0	0.0	0.0%	0%	0%
ORGANIC	Ceramics							0.0	0.0	0.0	0.0	0.0%	0%	0%
CONSTRUCTION	Unrested Wood							0.0	0.0	0.0	0.0	0.0%	0%	0%
CONSTRUCTION	Treated Wood							0.0	0.0	0.0	0.0	0.0%	0%	0%
CONSTRUCTION	Concrete							0.0	0.0	0.0	0.0	0.0%	0%	0%
CONSTRUCTION	Asphalt paving							0.0	0.0	0.0	0.0	0.0%	0%	0%
CONSTRUCTION	Asphalt roofing							0.0	0.0	0.0	0.0	0.0%	0%	0%
CONSTRUCTION	Gypsum Board							0.0	0.0	0.0	0.0	0.0%	0%	0%
CONSTRUCTION	Rock & Soils							0.0	0.0	0.0	0.0	0.0%	0%	0%
CONSTRUCTION	Composite C&D							0.0	0.0	0.0	0.0	0.0%	0%	0%
HAZARDOUS	Household Hazardous Waste	10.6	4.3	2.1	0.0	0.1	0.1	7.5	0.0	20.4	4.4	100.0%	70%	82%
SPECIAL	Bulky wastes							0.0	0.0	0.0	0.0	0.0%	0%	0%
SPECIAL	Sewage Sludge							0.0	0.0	0.0	0.0	0.0%	0%	0%
SPECIAL	Disposable Diapers / Fertilizer							0.0	0.0	0.0	0.0	0.0%	0%	0%
SPECIAL	Treated Medical waste							0.0	0.0	0.0	0.0	0.0%	0%	0%
SPECIAL	Tires & Rubber							0.0	0.0	0.0	0.0	0.0%	0%	0%
TOTALS		10.6	4.3	2.1	0.0	0.1	0.1	7.5	0.0	20.4	4.4	100.0%	70%	82%

From Press Release prepared by Recreation Research & Development

Commercial Collection		Household H&W Roundup		pounds per gallon		tons		Destination 1	Destination 2
Date	11-Jul-97	Date	12-Jul-98						
Customers	3	Customers	3						
Cars	484	Cars	5						
Hours	50	Hours	15000						
First 10 minutes	65 pounds	First 10 minutes	65 count						
Chemicals (pesticides, car batteries)	225 linear feet	Chemicals (pesticides, car batteries)	225 linear feet						
Fluorescent tubes	500 gallons	Fluorescent tubes	500 gallons						
motor oil	55 gallons	motor oil	55 gallons						
anti-freeze	1000 gallons	anti-freeze	1000 gallons						
latex paint	900 gallons	latex paint	900 gallons						
solvents, thinners, oil paint		solvents, thinners, oil paint							

Projections for household hazardous waste collection at the Crescent City Landfill

based on data for May - Sep 98, which is more complete than data available for 1997

Summer		Winter		lbs/gal		Summer		Winter		Management
Motor oil	982	982 gallons	7.1	3.49	3.49	Tons				Recycled (Chico Drain Oil?)
Paid deposit	153	153 gallons				Tons				
No payment	829	829 gallons				Tons				
Antifreeze	23	23 gallons	8	0.09	0.09	Tons				
Batteries	107	120 count	12	0.84	0.72	Tons				
latex paint	29	30 gallons	8.5	0.12	0.13	Tons				Dried on site

Figure A -10: Total Del Norte Recycling

1997 Del Norte Discard Generation Study

MATERIAL	TOTAL DEL NORTE RECYCLING 1997						Total Crescent City Recycling 1997						Total Unincorporated Recycling 1997					
	Residential		Commercial		Institutional		Residential		Commercial		Institutional		Residential		Commercial		Institutional	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
CARBON																		
PAPER (Cardboard (CCC))	64.7	64.7	186.5	186.5	251.2	251.2	6.5	6.5	155.3	155.3	18.1	18.1	58.2	58.2	31.2	31.2	89.4	89.4
PAPER (Newspaper)	170.6	170.6	11.0	11.0	131.6	131.6	11.5	11.5	6.5	6.5	0.9	0.9	109.0	109.0	4.5	4.5	111.5	111.5
PAPER (White Envelope)	5.8	5.8	0.6	0.6	6.4	6.4	0.6	0.6	0.3	0.3	0.9	0.9	5.2	5.2	0.2	0.2	5.4	5.4
PAPER (Other Office Paper)	17.9	17.9	1.7	1.7	19.6	19.6	1.8	1.8	1.0	1.0	2.8	2.8	16.1	16.1	0.7	0.7	16.8	16.8
PAPER (Magazines / Catalogs)	18.9	18.9	1.8	1.8	20.7	20.7	1.9	1.9	1.1	1.1	3.0	3.0	17.0	17.0	0.7	0.7	17.7	17.7
PAPER (Paperboard)																		
PAPER (Other / Composite Paper)	32.7	32.7	3.2	3.2	35.9	35.9	3.3	3.3	1.9	1.9	1.9	1.9	29.4	29.4	1.3	1.3	30.7	30.7
GLASS (Clear containers)	127.3	127.3	11.4	11.4	138.7	138.7	12.7	12.7	6.8	6.8			114.6	114.6	4.6	4.6	119.2	119.2
GLASS (Colored containers)																		
GLASS (Flat / Window glass)																		
GLASS (Other glass)																		
METAL (Steel cans)	11.4	11.4	0.9	0.9	12.4	12.4	1.3	1.3	0.6	0.6			10.1	10.1	0.4	0.4	10.5	10.5
METAL (Major Appliances)	32.6	32.6	9.0	9.0	41.6	41.6	6.5	6.5	2.7	2.7	0.0	0.0	26.0	26.0	6.3	6.3	38.9	38.9
METAL (Ferroalloys)	5.5	5.5	0.5	0.5	6.1	6.1	0.6	0.6	0.3	0.3	0.9	0.9	5.0	5.0	0.2	0.2	5.2	5.2
METAL (Aluminum cans)	50.0	50.0	4.7	4.7	54.7	54.7	5.3	5.3	2.8	2.8	8.1	8.1	44.7	44.7	1.9	1.9	46.6	46.6
METAL (Other non-ferrous)	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
METAL (Mixed metal/metal & small appliances)																		
PLASTIC (HDPE Other (H))	6.4	6.4	0.6	0.6	7.0	7.0	0.6	0.6	0.4	0.4	1.0	1.0	5.7	5.7	0.3	0.3	6.0	6.0
PLASTIC (PET Plastic (H))	10.1	10.1	0.9	0.9	10.9	10.9	0.9	0.9	0.5	0.5	1.5	1.5	9.1	9.1	0.4	0.4	9.5	9.5
PLASTIC (Firm Plastics (H & other))																		
PLASTIC (Durable plastic items)																		
PLASTIC (Other plastics)																		
ORGANIC (Food Waste)			1440.0	1440.0	1440.0	1440.0			1440.0	1440.0	1440.0	1440.0						
ORGANIC (Fish & Meat Waste)																		
ORGANIC (Leaves & Grass)																		
ORGANIC (Prunings)																		
ORGANIC (Branches & stumps)																		
ORGANIC (Textiles)			1.5	1.5	1.5	1.5									1.5	1.5		
ORGANIC (Other and Fines)																		
ORGANIC (Ceramics)																		
CONSTRUCTION (Untreated Wood)																		
CONSTRUCTION (Treated Wood)																		
CONSTRUCTION (Asphalt paving)																		
CONSTRUCTION (Asphalt roofing)																		
CONSTRUCTION (Gypsum Board)																		
CONSTRUCTION (Rock & Soils)																		
CONSTRUCTION (Composite C&D)																		
HAZARDOUS (Household Hazardous Waste)																		
SPECIAL (Bulky wastes)																		
SPECIAL (Sewage Sludge)																		
SPECIAL (Disposable Diapers / Fem. Hygiene)																		
SPECIAL (Treated Medical waste)																		
SPECIAL (Tires & Rubber)																		
TOTALS	503.9	496.7	1672.9	1672.3	6.6	344.3	2183.4	2538.3	53.7	51.1	1620.2	1619.9	0.0	0.0	1673.9	1671.0	450.2	445.6
																	57.4	57.4
																	6.6	364.5
																	509.3	867.5

1997 Del Norte Discard Generation Study

Printed on minimum 20% post-consumer recycled paper

Figure A -12: Total Drop-off Recycling

1997 Del Norte Discard Generation Study

MATERIAL	TOTAL DEL NORTE DROPOFF RECYCLING 1997						Total Crescent City Dropoff 1997						Total Unincorporated Dropoff 1997, including appliances					
	Residential		Commercial		Institutional		Residential		Commercial		Institutional		Residential		Commercial		Institutional	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Season																		
PAPER Cardboard (OCC)	6.7	6.7											6.7	6.7				
PAPER Newspaper																		
PAPER White ledger																		
PAPER Other Office paper																		
PAPER Magazines/Catalogs																		
PAPER Paperboard																		
PAPER Other / Composite paper																		
GLASS Colored containers	8.5	8.5											8.5	8.5				
GLASS Clear containers																		
GLASS Flat / Window glass																		
GLASS Other glass																		
METAL Steel cans	1.5	1.5											1.5	1.5				
METAL Major Appliances	32.6	25.4					6.5	3.9	2.7	2.4	0.0	0.0	26.0	21.4	6.3	9.6	6.6	14.5
METAL Ferrous metals																		
METAL Aluminum cans	0.8	0.8											0.8	0.8				
METAL Other non-ferrous																		
METAL Mixed metal/frag & small appliances																		
PLASTIC HDPE Clear (#2)	1.1	1.1											1.1	1.1				
PLASTIC PET Plastic (#1)																		
PLASTIC Film Plastics (#4 & other)																		
PLASTIC Flexible plastic items																		
PLASTIC Rigid plastic items																		
ORGAN Food Waste																		
ORGAN Fish & Meat Waste																		
ORGAN Leaves & Grass																		
ORGAN Prunings																		
ORGAN Branches & stumps																		
ORGAN Textiles																		
ORGAN Other and Flies																		
ORGAN Ceramics																		
CONSTR Untreated Wood																		
CONSTR Treated Wood																		
CONSTR Concrete																		
CONSTR Asphalt paving																		
CONSTR Asphalt roofing																		
CONSTR Gypsum Board																		
CONSTR Rock & Soils																		
CONSTR Composite C&D																		
HOUSEHOLD Hazardous Waste																		
SPECIAL Bulky wastes																		
SPECIAL Sewage Sludge																		
SPECIAL Disposable Diapers / Fem Hygiene																		
SPECIAL Medical waste																		
SPECIAL Tires & Rubber																		
TOTALS	51.1	43.9	9.0	11.9	6.6	14.5	66.7	70.3	6.5	3.9	2.7	2.4	0.0	0.0	9.3	6.3	44.5	39.9
																	6.6	14.5
																	57.4	63.9

Figure A -13: Total Recycling Collection

1997 Del Norte Discard Generation Study

MATERIAL		TOTAL DEL NORTE RECYCLING COLLECTION 1997						Total Crescent City Collection 1997						Total Unincorporated Collection 1997					
		Residential	Commercial	Institutional	Total Tons	Residential	Commercial	Institutional	Total Tons	Residential	Commercial	Institutional	Total Tons	Residential	Commercial	Institutional	Total Tons	Residential	Commercial
Season	Type	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
CLERGY																			
PAPER	Cardboard (OCC)																		
PAPER	Newsprint																		
PAPER	White ledger																		
PAPER	Other office paper																		
PAPER	Magazines / Catalogs																		
PAPER	Paperboard																		
PAPER	Other / Composite paper																		
GLASS	Clear containers																		
GLASS	Colored containers	0.8	0.8		0.8	0.8	0.8		0.8	0.8	0.8		0.8	0.8	0.8		0.8	0.8	0.8
GLASS	Flat / Window glass																		
GLASS	Other glass																		
METAL	Steel cans	0.3	0.3		0.3	0.3	0.3		0.3	0.3	0.3		0.3	0.3	0.3		0.3	0.3	0.3
METAL	Major Appliances																		
METAL	Ferrous metals																		
METAL	Aluminum cans	0.4	0.4		0.4	0.4	0.4		0.4	0.4	0.4		0.4	0.4	0.4		0.4	0.4	0.4
METAL	Other non-ferrous																		
METAL	Mixed metal/metal & small appliance																		
PLASTIC	HDPPE Clear (#1)																		
PLASTIC	PET Plastic (#1)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0
PLASTIC	Flam Plastics (#4 & other)																		
PLASTIC	Durable plastic items																		
PLASTIC	Other plastics																		
ORGANIC	Food Waste																		
ORGANIC	Fish & Meat Waste																		
ORGANIC	Leaves & Grass																		
ORGANIC	Prunings																		
ORGANIC	Branches & stumps																		
ORGANIC	Textiles																		
ORGANIC	Other and Fines																		
ORGANIC	Comunks																		
CONSTR	Untreated Wood																		
CONSTR	Treated Wood																		
CONSTR	Concrete																		
CONSTR	Asphalt paving																		
CONSTR	Asphalt roofing																		
CONSTR	Opium Board																		
CONSTR	Rock & Soil																		
CONSTR	Composite CAD																		
HAZAR	Household Hazardous Waste																		
SPECIAL	Bulky wastes																		
SPECIAL	Sewage Sludge																		
SPECIAL	Disposable Diapers / Fam. Hygiene																		
SPECIAL	Treated Medical waste																		
SPECIAL	Tires & Rubber																		
TOTALS		1.5	1.5		350.0	66.7	416.7	1.5	1.5	36.5	36.5		38.0	38.0	28.7	28.7	350.0	28.7	378.7

Figure A -14: Total Private Recycling

1997 Del Norte Discard Generation Study

MATERIAL		TOTAL DEL NORTE PRIVATE RECYCLING						Total Crescent City Private Recycling 1997						Total Unincorporated Private Recycling 1997					
		Residential		Commercial		Institutional		Residential		Commercial		Institutional		Residential		Commercial		Institutional	
		Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Category	Type																		
PAPER	Cardboard (OCC)																		
PAPER	Newspaper																		
PAPER	White paper																		
PAPER	Other Office paper																		
PAPER	Magazines / Catalogs																		
PAPER	Paperboard																		
PAPER	Other / Composite paper																		
GLASS	Clear containers																		
GLASS	Colored containers																		
GLASS	Flat / Window glass																		
GLASS	Other glass																		
METAL	Steel cans																		
METAL	Major Appliances																		
METAL	Ferrous metals																		
METAL	Aluminum cans																		
METAL	Other non-ferrous																		
METAL	Mixed nonferrous / Small appliances																		
PLASTIC	HDPE Clear (#2)																		
PLASTIC	PET Plastic (#1)																		
PLASTIC	Film Plastics (#4 & other)																		
PLASTIC	Durable plastic items																		
PLASTIC	Other plastics																		
ORGANIC	Food Waste																		
ORGANIC	Fish & Meat Waste																		
ORGANIC	Leaves & Grass																		
ORGANIC	Prunings																		
ORGANIC	Branches & stumps																		
ORGANIC	Tires																		
ORGANIC	Other and Fines																		
ORGANIC	Ceramics																		
CONSTRUCTION	Untreated Wood																		
CONSTRUCTION	Treated Wood																		
CONSTRUCTION	Concrete																		
CONSTRUCTION	Asphalt paving																		
CONSTRUCTION	Asphalt roofing																		
CONSTRUCTION	Gypsum Board																		
CONSTRUCTION	Rock & Soils																		
CONSTRUCTION	Composite C&D																		
HAZARDOUS	Household Hazardous Waste																		
SPECIAL	Bulk wastes																		
SPECIAL	Sewage Sludge																		
SPECIAL	Disposable Diapers / Fem. Hygiene																		
SPECIAL	Treated Medical waste																		
SPECIAL	Tires & Rubber																		
TOTALS																			

Appendix B: Illustrations from Strategic Recycling

- Figure B-1: Solid Waste Life-Cycle Assessment
- Figure B-2: State Laws and Voluntary Agreements for Minimum Recycled Content
- Figure B-3: Linear Management System
- Figure B-4: Cyclical Management System
- Figure B-5: Mining the Rates
- Figure B-6: State Disposal Bans

Figure B-1: Solid Waste Life-Cycle Assessment

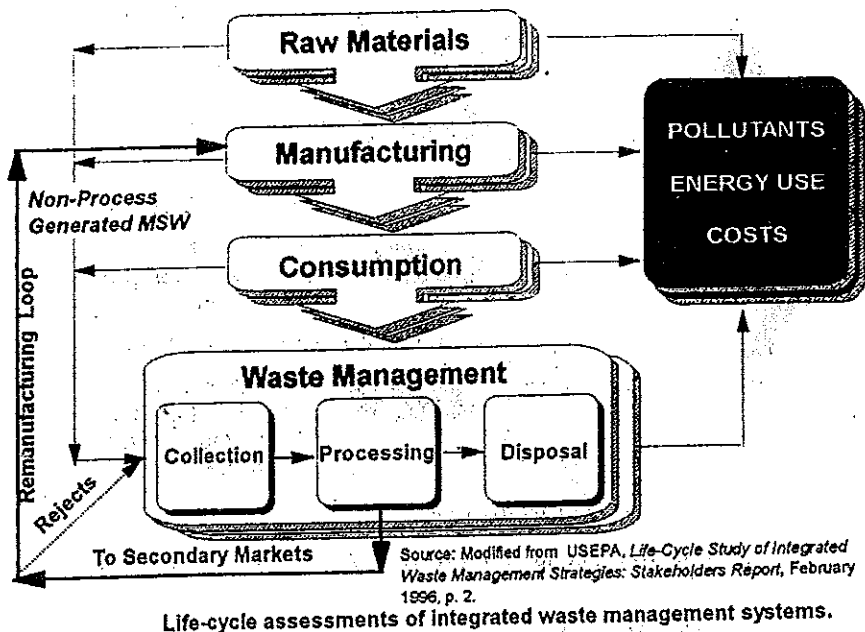
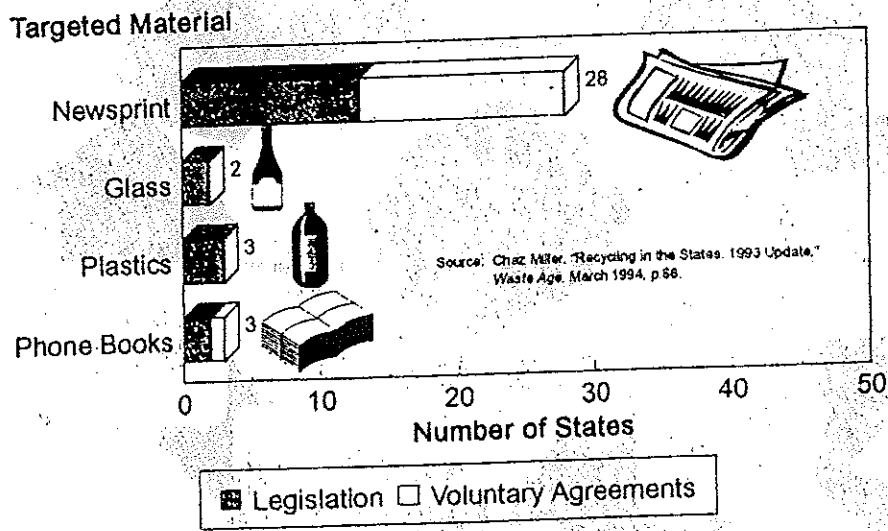
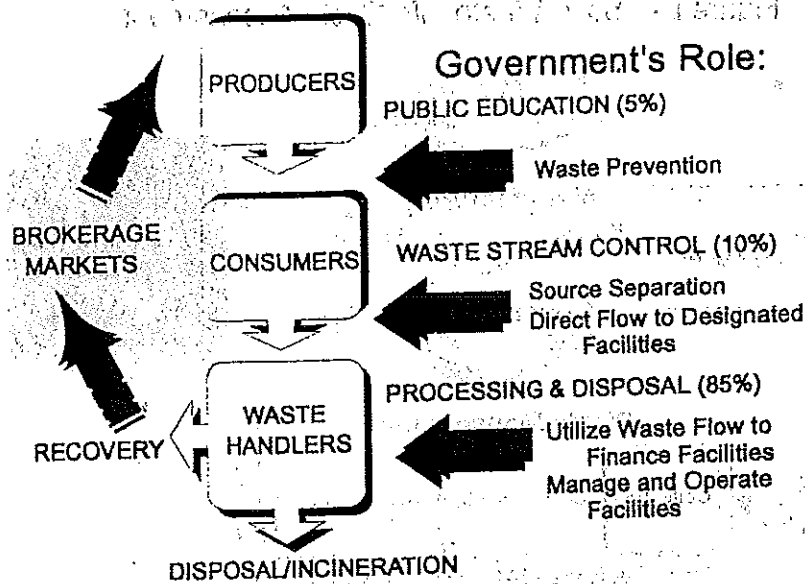


Figure B-2: State Laws and Voluntary Agreements for Minimum Recycled Content



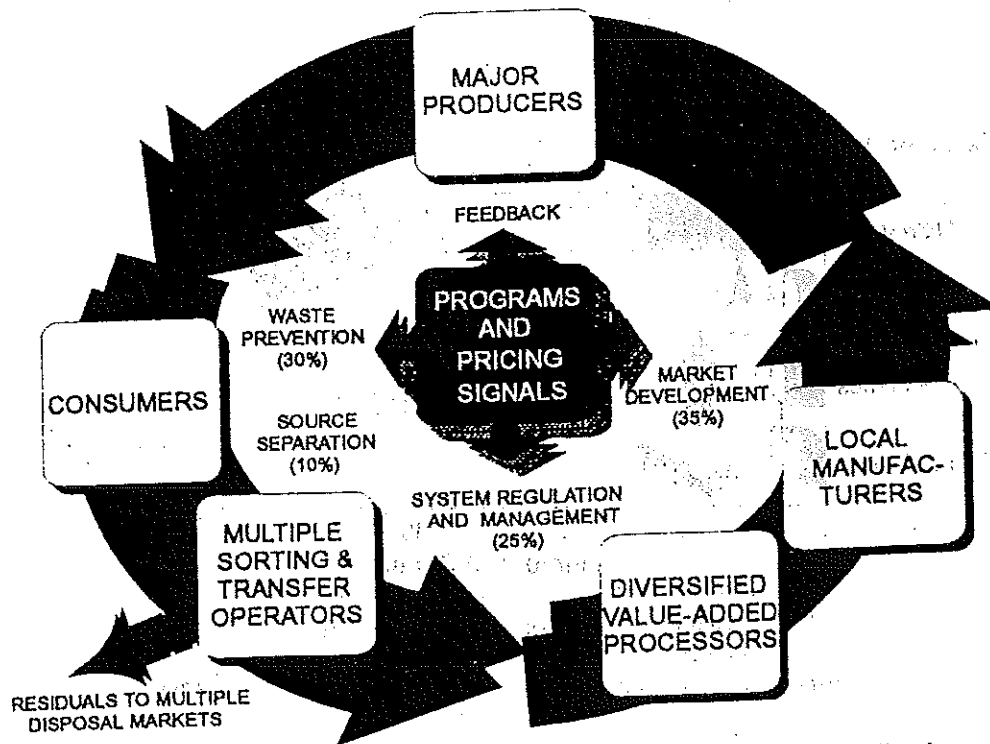
Graphics from Kay Martin, *Strategic Recycling*, Darkhorse Press 1996

Figure B-3: Linear Management System



Budget appropriations and government's role in a linear system.

Figure B-4: Cyclical Management System



Budget appropriations and government's role in a cyclical system.

Graphics from Kay Martin, Strategic Recycling, Darkhorse Press 1996

Figure B-5: Mining the Rates

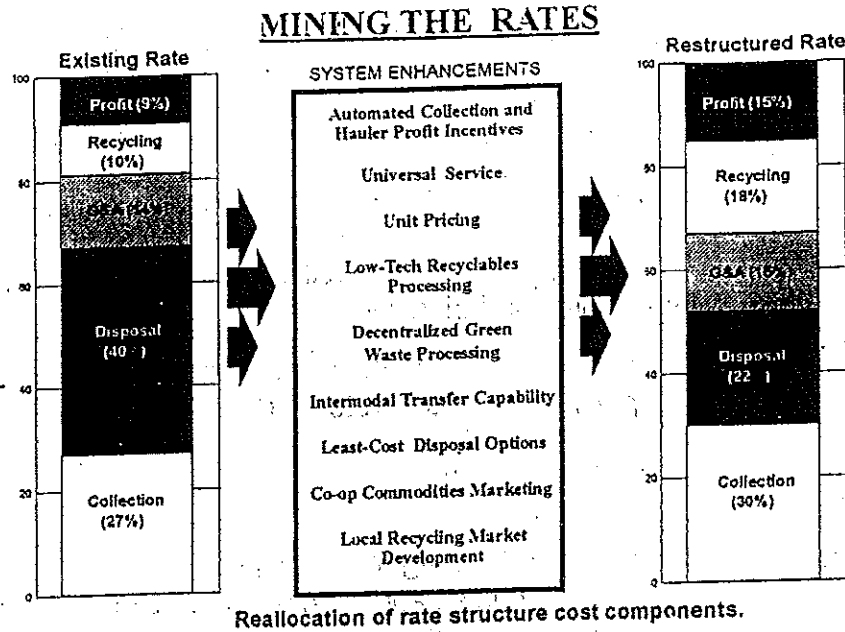
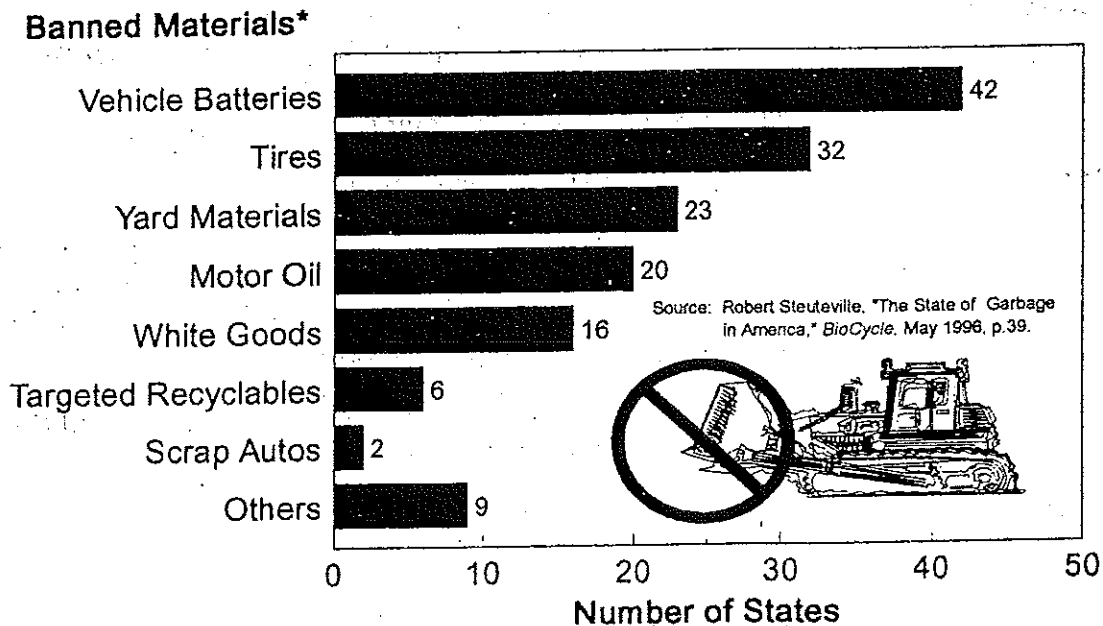


Figure B-6: State Disposal Bans



* "Targeted Recyclables" include various recyclable containers, single polymer plastics; recyclable paper, and nondegradable grocery bags.
 * "Others" includes demolition debris, paint, motor filters, antifreeze, small quantity hazardous wastes, other batteries, and sources of mercury.

Materials banned from disposal by state legislation.

Graphics from Kay Martin, *Strategic Recycling*, Darkhorse Press 1996

Appendix C: Glossary

ADF (Advance Disposal Fee)	a fee charged at the point of purchase to pay for the disposal or recovery of that product or material
Authority	when capitalized, this term refers to the Del Norte Solid Waste Management Authority, a joint powers authority of the City of Crescent City and the County of Del Norte
ban	formal prohibition of a specific material from a particular use, facility, or jurisdiction
boycott	a coordinated avoidance of a specific material, product, or company, to express protest or to coerce
capture	the proportion of material recovered by a collection system
CIWMB (California Integrated Waste Management Board)	the principle State agency responsible for administering and enforcing laws and regulations related to integrated waste management and disposal
clusters	groups of recovery facility operators, discard processors, recycling-based manufacturers, and/or resale businesses which benefit from locating close to one another
collection	pickup and transport of discards
deconstruction	the act of dismantling buildings or structures in such a way as to maximize the reuse of building materials, separate the remaining materials for recycling and minimize or eliminate the amount of materials to be landfilled.
deposit	a fee collected at the point of purchase which may be redeemed at the point of collection
discard	a product or material which has minimal value to the original owner, and can include materials which are to be reused, resold, recycled, composted, or disposed
disposal stream	the entire variety and quantity of materials disposed from a region or generator
disposal	landfill or incineration
diversion	see recovery
DNSWMA	the Del Norte Solid Waste Management Authority, a joint powers authority of the City of Crescent City and the County of Del Norte
end-user	mills and other industrial facilities where recovered materials are converted into new products

EPR (Extended Producer Responsibility)	actions by or mandates upon manufacturing, packaging, and/or retail companies to share responsibility for the costs or management of the infrastructure for collection, processing, recovery, or secondary manufacture of their products or packages after discard.
ESJPA	the Environmental Services Joint Powers Authority of the Regional Council for Rural Counties in California
feedstock	materials ready for manufacture
franchise	an agreement giving exclusive collection rights within a defined region or customer base, commonly used for municipal garbage collection contracts
generator	the resident, commercial business, or institution which discards
HDPE (high density polyethylene)	the hard, translucent plastic used to make milk jugs, and which is frequently colored for other packaging applications.
ISO 14000	a family of generic management standards involving certification, registration and accreditation of an organization's processes and actions to minimize harmful effects on the environment caused by its activities.
LDPE (low density polyethylene)	the most common film plastic, often used to make plastic bags
LEA (Local Enforcement Agent)	the government employee responsible for local enforcement of laws administered by the CIWMB
listserves	subscription-based distribution networks for electronic mail, usually pertaining to a specific topic which is of interest to the subscribers
market	a purchaser of secondary materials; end-users are a market for processors, and processors are a market for collectors
mini-can program	providing larger, convenient receptacles for recovery and much smaller containers for disposal
OCC (old corrugated cardboard)	the grade of cardboard most commonly collected by community recycling programs
on-site sales	sales of discards at the point the items are discarded, such as garage sales
on-site management	separation, storage, and processing of discards prior to collection
ONP (old news print)	the grade of newsprint most commonly collected by community recycling programs

PAYT (pay as you throw)	disposal rate structures with an equal cost per volume or cost per ton, regardless of the quantity disposed.
permit fees	fees assessed with the issuance or renewal of a permit
PET (polyethylene terephthalate)	the plastic resin most commonly used for soda bottles
process wastes	materials discarded during processing or manufacture
processing	sorting, grading, cleaning, densifying, or packaging of secondary materials
PSA (public service announcement)	a formal release of public information to be broadcast in newspapers, radio, and television for community benefit
recovery	reuse, repair, recycling, or composting
Recovery Ordinance	a formal policy establishing a deposit, fee, fine, or mandatory program for the proper recovery and/or disposal of targeted materials that is levied at the point of purchase
remediation	treatment to remove contamination re-establish habitat
resource recovery park	a facility with shared resources housing a variety of recovery-based operations, possibly including serial drop-off of reusable or recoverable materials, businesses conducting repair, processing, manufacture and resale of products derived from secondary materials
secondary materials	materials which at one time were discarded
sector	groups of businesses and non-profits which use, manage, and/or discard similar materials
sector huddles	meetings of generators, collectors, processors, existing and potential recycling-based manufacturers, and relevant regulatory agency representatives to enable targeted sectors to improve on-site management for pollution prevention and materials recovery
self-haul	materials hauled by the generator, or contracted for hauling by the generator in an agreement outside the collections franchise agreement
serial drop-off	a facility or collection of nearby facilities designed to provide opportunities to drop off specific recoverable items or materials in separate locations
service void	specific items or materials within the disposal stream which have no local recovery mechanism

service opportunity	items or materials within the disposal stream which could potentially be recovered through existing programs, but are not
source reduction	see waste prevention
tipping	the action of discard for self-haulers and other haulers, whether at a disposal or a recovery facility
TS / MRF (transfer station / materials recovery facility)	a single facility which receives discard materials, recovers a minimum of 15% of the materials received, and consolidates the materials to be disposed into larger vehicles for transport to a disposal facility
user fee	a fee for service charged to those who use the service
variable can rates	disposal rates which encourage recovery by charging less for recovery, and which charge more on a cost per quantity basis for larger quantities to be disposed
vermicomposting	feeding selected discards to worms and periodically harvesting the worm castings, which generally make an excellent fertilizing soil amendment
waste reduction	any action which reduces waste, including waste prevention, reuse, recycling, and composting
waste	discards whose residual value is destroyed by disposal
waste stream	see disposal stream
waste prevention	modification of the design, manufacture, purchase, or use of a product, package, or material which reduces the quantity discarded
yellow pipeline	a program in which students bring their recyclable materials on the school bus to drop-off or collection centers at their schools
zero waste	elimination of waste

Appendix D: Related Policies and Resolutions

1. Resolution 99-03: In Support of Citizen, Local and National Actions to Use Recycled Plastic in Beverage and Other Food Containers
2. Board Minutes and Staff Report regarding Policy Supporting Recovery Businesses
3. Resolution of the Local Task Force

**DEL NORTE SOLID WASTE
MANAGEMENT AUTHORITY**

RESOLUTION NO. 99-03

**RESOLUTION OF THE GOVERNING BOARD OF THE DEL NORTE
SOLID WASTE MANAGEMENT AUTHORITY
IN SUPPORT OF CITIZEN, LOCAL AND NATIONAL ACTIONS TO USE RECYCLED
PLASTIC IN BEVERAGE AND OTHER FOOD CONTAINERS**

WHEREAS, the Del Norte Solid Waste Management Authority is charged with achieving the goal of reducing per capita disposal by 50% from its adjusted 1990 levels by the year 2000; and

WHEREAS, the commitment of Del Norte County to the recovery of plastics through our community recycling programs has extended over 10 years; and

WHEREAS, the capacity of the Crescent City Landfill is anticipated to be depleted within the next 3 years and subsequent future disposal costs are anticipated to rise significantly; and

WHEREAS, in 1992 plastics occupied more than 20% of landfill space nationwide, and that by the year 2000 plastics will occupy more than 1/4 of landfill space nationwide; and

WHEREAS, between 1990 and 1996, virgin production of polyethylene terephthalate (PET), the primary plastic used to make soda bottles, has expanded so dramatically that for every additional pound of PET recycled during this period over 3 pounds of additional virgin resin was produced resulting in a dramatic net increase in the proportion of PET in the waste stream; and

WHEREAS, the 1997 Del Norte Discard Study showed that although PET was the most recycled plastic in our County, only 21% was recycled and this is far short of our 50% diversion mandate; and

WHEREAS, while the market value of recycled PET has varied widely over the years, the market conditions prevailing now and in recent years have contributed to declining recycling rates for PET bottles each year since 1994; and

WHEREAS, FDA-approved technology exists today to incorporate recycled PET into new beverage containers, and proven technology for refillable plastic bottles also exists, and in fact both of these processes are being used by major soft-drink bottlers in nations throughout the world; and

10/1/99 3:10 PM 33

WHEREAS, it is widely acknowledged that the use of recycled PET in the production of beverage containers would have an enormous positive impact on the value of recycled PET.

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the Del Norte Solid Waste Management Authority support all residents and businesses of Del Norte County as they encourage all soft drink manufacturers to use recycled plastic in their packages; and


BE IT FURTHER RESOLVED, that the Del Norte Solid Waste Management Authority supports national, state and local campaigns to encourage the use of FDA-approved recycled plastic in packaging.

PASSED AND ADOPTED this 8th day of November, 1999, by the following polled vote:


AYES: Commissioners Hollinsead, Mayer, Hatfield, Reese and Eller

NOES: NONE

ABSENT: NONE


CLYDE ELLER, Chairman

ATTEST:


Ellen P. Brown, Clerk
Del Norte Solid Waste Management Authority

PERSONNEL - EVALUATION - DIRECTOR - 160504

The Del Norte Solid Waste Management Authority recessed at the hour of 10:19 p.m., to closed session - Evaluation for the Director - A Closed Session may be held: Under government codes Section 54957 - Public Employee Performance Evaluation, reconvening at the hour of 10:40 a.m., with all parties present as heretofore designated, with the exception of Counsel Follett who was absent at this time.

The Chairman announced that NO action was taken in closed session.

GENERAL - POLICY FOR NON PROFITS - RECYCLING REUSE - 160504

Analyst Ward presented a Proposed Policy for Non Profits - Recycling Reuse. Discussion followed.

On a motion by Commissioner Mayer, seconded by Commissioner Hatfield and unanimously carried the following staff recommendations were approved:

For all non-profits which receive donated materials from the general public for resale and for whom such resale is the primary source of business, or non-profits or businesses which receive or collect donated materials for recycling.

Upon written request for a waiver or reduction of disposal fees for materials which have been illegally dumped at an eligible resale or recycling facility.

1. Authority staff will first coordinate with the County Code Enforcement Officer and provide advise and assistance improving lighting, signage and fences which might deter illegal dumping, and will provide written advice on how to respond when an illegal dump occurs to increase chance of finding and convicting the culprits.
2. The Director is authorized to spend up to \$5,000.00 to improve security against illegal dumping at all eligible locations and/or to pay disposal fees for solid waste illegally dumped at eligible businesses until a final policy can be adopted.
3. Staff will return to the Board with recommendations regarding additional policies supporting eligible reuse and recycling businesses after actions have been taken to improve security against illegal dumping at several locations and after better information is available as to the cost of illegal dumping at each eligible location.



Del Norte Solid Waste Management Authority

391 Front Street, Crescent City, CA 95531

Phone (707) 465-1100 Fax (707) 465-1300

Staff Report

Date: 2 April 1997

Subject: Policies to support reuse and recycling businesses

Staff Recommendation: That the Authority adopt the following interim policy supporting reuse, and recycling businesses:

For all non-profits which receive donated materials from the general public for resale and for whom such resale is the primary source of business, or non-profits or businesses which receive or collect donated materials for recycling,

Upon written request for a waiver or reduction of disposal fees for materials which have been illegally dumped at an eligible resale or recycling facility,

1. Authority staff will first coordinate with the County Code Enforcement Officer and provide advice and assistance improving lighting, signage and fences which might deter illegal dumping, and will provide written advice on how to respond when an illegal dump occurs to increase chance of finding and convicting the culprits.
2. The Director be authorized to spend up to \$5000 to improve security against illegal dumping at all eligible locations and/or to pay disposal fees for solid waste illegally dumped at eligible businesses until a final policy can be adopted.
3. Staff will return to the Board with recommendations regarding additional policies supporting eligible reuse and recycling businesses after actions have been taken to improve security against illegal dumping at several locations and after better information is available as to the cost of illegal dumping at each eligible location.

Background: On several occasions, most recently at the 12 March 1997 meeting of the Authority Board, non-profits and recycling businesses which receive materials from the public (including but not limited to Coastline Enterprises, the Humane Society of Del Norte, and St. Vincent DePaul) have requested assistance in disposing of materials which have been illegally dumped at their facilities after hours. These materials have included bulky items, refrigerators, tires, and refuse. Reuse and recycling businesses which receive materials from the public are essential and cost-

effective programs which divert materials from the landfill, and landfill diversion programs are among the legislated responsibilities of the Authority.

Analysis: Any policy adopted by the Authority addressing this issue must clarify which type of business or non-profit would qualify for the support, the type and level of support offered, and any additional conditions for the support offered. Additionally, the Board should be aware the fiscal impacts of such a policy, the staff time required for implementation and maintenance of the policy, how such a policy would promote reuse and recycling, how the policy continues to deter such illegal dumping, how the policy would relate to civil or legal actions against illegal dumpers, and the potential impacts to businesses, non-profits, and charity activities which did not qualify for the support.

Alternatives: The following outline below lists the menu of policy options to address this issue, according to the criteria identified in the Analysis section. After each outline topic is a brief discussion of each policy option and the rationale for the staff recommendation.

- I. **Who is eligible?** (in order of most-restrictive to least restrictive):
- A. Non-profits (501c3) which receive donated materials from the general public for resale, which receive no other public assistance, and for whom such resale is the primary source of business.
 - B. Non-profits (501c3) which receive donated materials from the general public for resale, and for whom such resale is the primary source of business.
 - C. Non-profits (501c3) which receive donated materials from the general public for resale, recycling, or composting and for whom such resale, recycling or composting is a primary source of business.
 - D. Non-profits and businesses which receive donated materials from the general public for resale, recycling, or composting and for whom such resale, recycling or composting is the primary source of business.
 - E. Non-profits which receive donated materials from the general public for resale and for whom such resale is the primary source of business, or non-profits or businesses which receive or collect donated materials for recycling.
 - F. All parties which receive donated materials from the general public for resale, recycling and composting.

Staff recommend that the policy apply to option E. Option A could penalize a non-profit for applying for grant funds which could bring funds into the County and reduce local costs. Option B does not include recycling businesses, which are also often subjected to illegal dumping. Option C excludes for-profit businesses, even if they engage in the same community service as non-profits. Option D also includes for-profit second-hand stores, and excludes one of our two recycling centers in town. Option F would include

church rummage sales, and would be challenging to implement fairly.

II. Type and level of support offered to those eligible (generally from less expensive to more expensive):

- A. Advice on lighting, signage and fences which might deter illegal dumping, and providing written advice on how to respond when an illegal dump occurs to increase chance of finding and convicting the culprits.
- B. Create a special rate for illegally dumped items equal to the disposal charge assessed by the landfill contractor.
- C. Authority payment of all disposal fees for select loads delivered to the landfill from the "Community Cleanup" budget item, on a not-to-exceed basis for each eligible party. The select loads approved for payment by the Authority could be determined by material type or by some method of verifying that the materials had actually been illegally dumped.
- D. The Director be authorized to spend up to \$5000 to improve security against illegal dumping at all eligible locations and/or to pay disposal fees for solid waste illegally dumped at eligible businesses until a final policy can be adopted.
- E. Authority payment of all collection and disposal fees for material illegally dumped.
- F. Authority payment for all documented material diverted from the landfill to eligible parties at the rate equivalent to the per ton disposal fee charged by the landfill operator to dispose of municipal solid waste, currently \$22.50 per ton.

Staff recommend options A and option D for this aspect of the policy. Option A would primarily involve staff time for each eligible party. For option B, the most reasonable rate would be disposal rate charged by the landfill contractor, representing only a 13% savings. Creating and administering such a rate, however, would be problematic, would likely cause confusion among staff at the landfill gate, and would require the adoption of a new rate ordinance.

Option C, if a monthly not-to-exceed amount was applied, could allow some support to these businesses and non-profits which could be budgeted. It is difficult to determine a fair rate for each party applying for such support, as the parties vary in the types of materials illegally dumped, the reuse and recycling services each party offers to the public, and the volume of materials illegally dumped, reused or recycled by each party. Generally, reuse businesses have a greater quantity of bulky items to dispose which would be more expensive to the Authority, and eligible recyclers would have more municipal solid waste. Furthermore, option C would not provide an incentive in the rates to control illegal dumping until after the not-to-exceed amount had been reached, and would reduce the funds available for other community cleanup activities. Administering option C would also likely cause some confusion among gate staff.

Option D could be used as an interim policy until an appropriate not-to-exceed amount could be determined for each eligible party after security against illegal dumping have been improved.

Option E could place the Authority in a position of paying a bill to Del Norte Disposal for collection. Option F would provide an ongoing incentive for eligible businesses and non-profits to continue finding ways to divert materials from the landfill, and such a policy could readily be adapted after the landfill closes. Option F would likely be expensive, difficult to monitor and verify, and could create legal difficulties, as the Authority would be paying for services without having undergone any competitive procurement process.

III. Possible additional conditions on those eligible prior to receiving support (generally from less trouble to more trouble):

- A. Review with Authority staff and County code enforcement officer regarding steps to take to deter illegal dumping, and steps to take if an illegal dump occurs.
- B. Providing quarterly reports regarding quantities of materials diverted from landfill.
- C. Installing fences and other protective measures to restrict access to areas prone to illegal dumping.
- D. Staff will return to the Board with recommendations regarding additional policies supporting eligible reuse and recycling businesses after action have been taken to improve security against illegal dumping at several locations and after better information is available as to the cost of illegal dumping at each eligible location.

Staff recommend option A and option D. Although option B would be helpful for monitoring program effectiveness, it is not necessary to monitor compliance with Authority's legal programmatic obligations. Option C may be justified after implementation of option A to reduce the costs of implementing this policy.

Fiscal Impacts:

The Authority is required to divert 50% of the waste stream by the year 2000 under the California Integrated Waste Management Act of 1989, as amended, or face potential fines. Thus, if these reuse and recycling businesses did not exist, the Authority could face considerably increased obligations to develop alternative waste prevention, reuse, recycling, and composting programs.

Implementing the recommended options would cost up to \$5000. Disposal costs would come from the Community Cleanup Fund and assistance to increase security would come from the Special Department Expense line item of the budget.

DEL NORTE SOLID WASTE TASK FORCE

RESOLUTION 99-01

RESOLUTION OF THE DEL NORTE SOLID WASTE TASK FORCE
REQUESTING THE BOARD OF SUPERVISORS TO RENAME THE
DEL NORTE SOLID WASTE TASK FORCE TO BECOME THE
DEL NORTE ZERO WASTE TASK FORCE

WHEREAS, the Del Norte Solid Waste Management Authority has endorsed the policies of Zero Waste, End Welfare for Wasting, and Jobs from Design and Discards; and

WHEREAS, the convening of the Del Norte Solid Waste Task Force is required by the County of Del Norte under California Public Resources Code Section 40950; and

WHEREAS, the Del Norte Solid Waste Management Authority has designated the Local Task Force meetings as the advisory body for review and comment on the Draft Del Norte Zero Waste Action Plan; and

WHEREAS, the current name for this body emphasizes solid waste, over which this body has very little responsibility, except to comment on solid waste disposal options which may impair recovery; and

WHEREAS, the responsibilities under law and in action of this body are to promote, expand, and evaluate programs which reuse, recover, recycle, compost, and otherwise divert materials from disposal; and

WHEREAS, the Local Task Force hereby also endorses the policies of Zero Waste, End Welfare for Wasting, and Jobs from Design and Discards; and

WHEREAS, the Del Norte Local Task Force supports a continual movement towards Zero Waste and believes that it can satisfy a critical advisory role for community education, public input and discussions as new programs are developed.

NOW, THEREFORE BE IT RESOLVED that the Board of the Del Norte Local Solid Waste Task Force request that the Board of Supervisors officially rename the Del Norte Local Solid Waste Task Force to the Del Norte Zero Waste Task Force; and

BE IT FURTHER RESOLVED that when membership is assigned and meetings convened as directed by the Del Norte County Board of Supervisors, the Del Norte Zero Waste Task Force will have membership as required in, and execute all

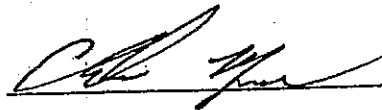
responsibilities of the Local Task Forces included in the California Public Resources Code Section 40950 and the California Integrated Waste Management Act of 1989 as amended.

PASSED AND ADOPTED this 14th day of December, 1999, by the following polled vote:

AYES: Moore, Austin, Hixon


NOES: None

ABSENT: Sanders, Mendez



Clarke Moore, Chair

ATTEST:


Ellen P. Brown, Recording Secretary
Del Norte Solid Waste Task Force

6 December 1999

2

D:\TEDDATA\AB939\LTZero Waste Task Force.wpd
Printed on minimum 20% post-consumer recycled paper

15 February 2000

157

Printed on minimum 20% post-consumer recycled paper

Appendix E: Group Notes from Border Coast Regional Recyclables Marketing Summit

Reuse & Salvage

GROUP:		Reuse & Salvage	
Materials or Goods Recovered:	Ideal / Optimum system for Max. recovery	Ideal / optimum system for adding value to sell:	
Not so much materials as products and structure/ system or facility	-Incubator where you can start building businesses around it. -Single location for reuse, recycling & disposal. -Combine with education & \$\$ incentives.	-Incubator center for all "re" word activities. -use nonprofit partner to run Incubator.	
Resources needed:	Barriers to Overcome:		
-Nonprofit or Incubator cooperative? -Land / Appropriate site -40 people / Businesses to support with County	-Sitting Issues, need to resolve tension between need to site transfer station VS. Need to start reuse now. -Need enforcement on illegal dumping issues, (need 30 - 40 people with you).		
Strategic Plan / Action Steps:			
What (short, med., long term)	Who	When	Resources needed
Rate Incentives			
Recovery contract @ landfill Mobil units? Temporary structure?			
Prosecutions 2-3 to establish model consciousness			
Medium term: Incubator businesses			

GROUP:		Reuse & Salvage	
Long term:			
Product responsibility policy & product bans			

Construction, Deconstruction & Demolition

GROUP:		Deconstruction	
Materials or Goods Recovered:	Ideal / Optimum system for Max. recovery	Ideal / optimum system for adding value to sell:	
Construction Remodel Demolition - [Deconstruction of Of bldg/Mat]	Incentives to Reuse 1 st then Recycle CD&L materials	Electronic Brokers- Re-Sale Stores- More End-Use Manufacturing- More Contractors- (More Recycling Options)	
Resources needed:		Barriers to Overcome:	
Education Business Options	Partners Lack of local Housing Stock Habits and Attitudes Reuse as too "Tree Hugging" <u>Not an Economic Benefit</u> ! Fire Dept doing "Demo by Fire"		
Strategic Plan / Action Steps:			
What (short, med., long term)	Who	When	Resources needed
Develop Team	Patti, Brian/Cal Ore	Monthly Conference calls	
Feasibility Study, Incl. Locations	Team Authority, Consultant	Sept 98 To March 99	- Waste Gen/Study - Grant \$ - Site options - Mkt options

GROUP:	Deconstruction		
	Partner- new business	April 99 To June 99	-Businesses ready to start
Financing, Permits, Start-up			
Education / Demonstration	Team, Authority, 3 current bldg/projects, Co/development Dept. Board of supervisors "core team" CALWORKS	August 98 Oct-1998 -\$ for spec writing	-pilot demo -on site deconstruction sales -construction discard reuse -case studies-press rel. -brochurs,directoies
Incentive plan for generators	-Team, Authority -County/City permit staff -Air water Board -county Health permit	Sept - March 99 research ----- April - Sept 99 Adopt policy & ordinance if needed.	Develop incentive options based on being economically competitive to landfill.
R&R Business development	Team Authority	June 1999	Planning
Medium term----- -permit Requirement to R&R -Start & expand manufacturers for R&R Materials	-Authority & community development dept. -RMDZ(CIWMB) staff Board of Supervisors, SBOC,RMDZ-staff, county Economic development, Humboldt area foundation.	Sept 2001 Sept 2001	new permits & decent brochures. Site/open for bos

Organics

GROUP:		Organics	
Materials or Goods Recovered:	Ideal / Optimum system for Max. recovery	Ideal / optimum system for adding value to sell:	
Food, Sludge	2-stream col/system - source separated drop off - Mobil grinding - mandatory eventually?	High Quality Compost	
Resources needed:	Barriers to Overcome:		
\$-raw material, data (volume) \$-Equipment \$-Site	-Low volume end product -Consistency of supply -Transportation to markets	-Economic feasibility -Technical process -Government regulations, ie: sludge use	
Strategic Plan / Action Steps:			
What (short, med., long term)	Who	When	Resources needed
meetings	Solid Waste/Hambro	2-weeks	Data
Feasibility study-initial	Hambro	30-60 days	Data
Final plan if loans feasible	Hambro	6-mos	Data
DNAWMA plan for raw material collection	DNSWMA	6-mos	Data
Financing plans	public and private sector	6-mos	Data
Construction	Hambro	2-mos	Data
Operation/testing	Hambro/County	on going	Data

Notes from Organic Group

Issues:

1. Food waste @ prison & else where
 2. For DN landfill is closing Organics 35-50% of landfill
 3. Transportation / Collection of some brush, wood etc.
- H = Hambro

Materials (Organic):

Brush and branches - H
 Stumps - H
 Restaurant waste / food waste - **prison & city**
 Sewage sludge - H
 Untreated wood - H
 Paper, newsprint, cardboard
 Cigarettes & filters
 Road kills / dead animals
 Cheese whey ?
 Fish waste - H
 Bulky waste - manufacture-wood products
 Leaves and grass - H
 Treated wood
 Street sweepings

Mandatory Separation:

1. Attitude needs to change
 Voluntarily or Mandatory - driven by economics of disposal=rate base
2. Needs to be more convenient
 Have bins @ dump-need to advertise that they are free (Rial stations)
 Community education expand (bin types)
 4. Rural stations
3. Collection system - improved clear direction on bins etc
4. Rural stations

Uses - Potential & Real:

1. Mandatory separation of organics to streams, Facilitate re-use, Include self haulers in separations.
2. Cardboard waste - fuel pellets
3. Wood and brush-Hambro
 -Burn individually
 -Back yard composting

-Wood chippers
 Possible
 -Bins for yard waste
 -Processing go to "generator"

Potential
 -Timber Co's use chemicals
 Economics of chipping or transporting
 4. "garbage"- Separate
 Compost-backyard & commercial
 5. Leaves/grass-backyard compost

Uses - Fertilizer Pellets:

1. Organic fertilizers
2. Fuel - (brush chips)
3. Chips
4. Sludge to agriculture ?

-Produce Class A Bio-solid plant (Josephine Co)

@ waste

Plant

- Compost
- System @ Disney World
- Food-compost & sludge
- Target mixture to local products

Uses - food waste:

- Prison/grocery stores relatively clean
- Compost
- Require separation & clean collection of organics
- Use paper bags not plastic
- Frequent collection
- "cooked" food issues

Problems -Capital Costs

- Transportation
- Low value items
- Compost needs to have local use
- Neighbors
- Compliant/opposition to facility
- Order problems
- Product Quality
- Npk Level

Businesses:

- Eureka Protein - Meat and road kill
- Hambro
- Chippers, transportation, composter's

Ideas:

- Regional research facility - share cost / materials/ etc-----
- Oregon / Calif
- Regional markets / suppliers

1. Ag

- 2. Cal trans
- 3. USFS
- 4. Shipping radios=?

Limited by cost think "NORTH"

Process:

- Collect (organic) everything else Separate-food, wood waste
- Sort/separate
- Store and deliver
- Use/manufacturing markets
- Collect "Murfable" organics, separate from other's
- Separate trucks & containers

Hambro: (needs for composting)

- Stormwater drainage permits/containment
- Pole barn-storage
- Black top
- Covered "drop off" site

Players:

- Public
- Collector
- Local Gov
- Processors
- Users
- Markets

Tasks: Increase quality of materials, control feed stock & mandatory requirement.

- Set the rules: -Gov takes lead but setup as "facilitation" of privet business
- Education: -Solid waste Authority
- Collection: -Franchise & self haulers
- Transport to (Hambro): -Fed \$ to help whole process, privet haulers
- Work with Ag. Dept extension/ research:-Develop product/process(privet-ie, Hambro)
- RFP's: -Process Market (privet Co's)

End Users:

- Remember compost is "low value" so end users cost is important
- must include transportation cost"\$ 2.00/mile" for truck-

How long does it take?

- 1. Public education. - voluntary sort
- 2. Contract up in Nov- (franchise) 3 mos Should have options written in to accommodate new ideas/activities in next 2 years.
- 3. Hambro research & establish their requirements
- 4. State/local permits=? Short term?
- 5. Two parable tracks
 - A. Public process
 - B. R&D/feasibility-- Hambro board--yes/no?

Funds: -Short term \$ needed for tipping fees to replace \$ lost from self haul to

"Free" bins or discounts for sorted materials, Where to

Collect \$.

-Cost of set up for Hambro is an issue !

- 1. Cap equipment for improvements
- 2. Grant or low interest loans
- 3. Try for a "model" project to attract TA & funds
- 4. ID sources of raw materials-ie Brookings ??

Evaluation/Planning process:

1. Hambro-Dwayne and Iv
2. Need a study-Authority, local Gov, public and co.
Set up a meeting-Iv will contact solid waste.
3. If meeting goes well then proceed further: feasibility
Volume of waste stream, seasonal variations etc-
4. 1 year to feasibility/2 year to operation
 - a -Hambro can decide 30 to 60 days after solid waste provides info
 - b -after decision to investigate Hambro can complete study -

6 mos.

Scrap Metals

GROUP:		Scrap Metals	
Materials or Goods Recovered:	Ideal / Optimum system for Max. recovery	Ideal / optimum system for adding value to sell:	
-car bodies, white goods, -tires(steel), small appliances -bulky items(steel coils) -tin cans, deconstruction.	-donation system(cans) -white goods etc to Bruce from transfer station, LF, & 40 yd bin at N.bank. -Industries bring scrap to Bruce for free dump. -no free drop off at Bruce for Res. -set up inclosed site for mattresses, furniture, white goods, St.vincent depaul or prison. -Mandatory take back for tires	(Processing/Mkts) -Baling -Better trucking -Aggregating diff. Sources of metals -Labor to sort, repair, dismantle (prison) ? -High grade/upgrade, non-Farris metals -Tire grant for Retailers	
Resources needed:	Barriers to Overcome:		
-Bailer, Car Crusher, -Trucking service./backhaul -donation system for old cars -Repair system & dismantling of white goods.	-On going Illegal dumping -Decreasing \$ for scrap cars -Transportation/Compaction -Health Safety Issues Oil from autos, Aerosols, Batteries-Sulfuric Acid		
Strategic Plan / Action Steps:			
What (short, med., long term)	Who	When	Resources needed
Pursue Tire grant	DNSWMA	Tomorrow	Retailers & Cleanup Illegal dump sites.
Meeting of all Metal Recycles & Generators	DNSWMA	Tomorrow	ID specific bailer needs and funding source
Tire take back ordinance		1-2 years	

GROUP:		Scrap Metals		
Oil \$		DNSWMA	\$ already here-allocated	oil filters
Jordan, (recycling)		Julindra	Tomorrow	Bailer for Jordan
Get Cascade		Auto wrecker	3-6 months	Crusher/Bailer for Bruce
couches and mattresses store some where		St. Vincent Depaul		
Drop boxes for white goods at transfer station				

Traditional Recyclables: Containers and Papers

GROUP:		Traditional Markets	
Materials or Goods Recovered:	Ideal / Optimum system for Max. recovery	Ideal / optimum system for adding value to sell:	
Small amounts of traditional recyclables- news paper, w/ occ, plastics, Glass	Rate structure Incentive Convenience Markets for product mandatory recycling	Local - market committed to locals. consistent market.	
Resources needed:	Barriers to Overcome:		
Cooperative Marketing Investments in technology trained employees	for collection -non mandatory garbage collection. Transportation. link between innovations & skills. funding sources. high risk /low interest loans.		
Strategic Plan / Action Steps:			
What (short, med., long term)	Who	When	Resources needed
Look at city and county procurement.	DNSWMA / PBSP	Short term	find out what the buy
inventory forum: Teachers, students, review available materials and quantity.	DNSWMA, Rotary, Business group.	Short term	
Become a Recycling development zone	DNSWMA	Short term	Fill out paper work get Humbolt County approval
Cooperative marketing with PBSP?	PBSP	Short term	

GROUP:	Traditional Markets		
Look at Welfare to work projects with recovery and re-manufacture enterprises , business training.			
Business Incubator with Technology			

Endnotes

1. Tellus Institute, CSG / Tellus Packaging Study: Assessing the impacts of production and disposal of packaging and public policy measures to alter its mix, 1992
2. Schall, John. "Does the Solid Waste Management Hierarchy Make Sense?," 1992
3. Hayes, Dennis. "Eco-nomic Power," *Seattle Weekly*. 10 November 1993
4. Schall, John. "Does the Solid Waste Management Hierarchy Make Sense?," 1992
5. Tellus Institute, CSG / Tellus Packaging Study: Assessing the impacts of production and disposal of packaging and public policy measures to alter its mix, 1992
6. Mollison, Bill. Permaculture: A Designer's Manual
7. Martin, Kay. Strategic Recycling: Necessary Revolutions in Local Government Policy, Darkhorse Press, 1996. The demand-side management principles on pages 170-171 were adapted within this report to describe the difference between Zero Waste and Integrated Waste Management.
8. Nattrass & Altomare. The Natural Step for Business, New Society Publishers, 1999.
9. North County Almanacs, 1998 Del Norte County Economic & Demographic Almanac. In 1992 there were 310 Lumber and manufacturing jobs, and in 1997 there were 192.
10. EMCON, Del Norte Countywide Integrated Waste Management Plan (1992, plus amendments). This Plan is mandated by the California Integrated Waste Management Act as amended, and is the central planning document describing how Del Norte County plans to implement programs to reduce the amount of adjusted per-capita waste disposal will be reduced from 1990 levels by 50% by the year 2000. This Plan includes a Source Reduction and Recycling Element, Household Hazardous Waste Element, Non-Disposal Facilities Element, and Siting Element. The Source Reduction and Recycling Element includes Components planning for Waste Generation, Source Reduction (Waste Prevention), Composting, Recycling, Special Waste, Education and Public Information, and Integration. The Household Hazardous Waste Element plans for collection and education related to household hazardous waste. The Siting Element describes plans for disposal for the following 15 years. The Non-Disposal Facilities Element describes all facilities except landfill and incineration facilities necessary to implement the Plan, such as the Transfer Station / Materials Recovery Facility and Composting facility planned for Del Norte County.

11. California Integrated Waste Management Board, Waste Diversion in Rural California (September 1991)
12. Gainer & Associates, Humboldt County Recycling Market Development Plan, (November 1992)
13. County of Del Norte memo from Code Enforcement Officer Deputy Esparza (10 January 2000)
14. North Coast Almanacs, 1998 Del Norte County Economic and demographic Almanac. The 1996 median household income in Del Norte was \$27,507 compared to the State median household income of \$41,176 during the same year.